

SPECIFICATION

ELECTRONIC SERVICE MANUAL DISPLAY PROGRAM AND RECORDING
MEDIUM ON WHICH THE PROGRAM IS RECORDED, ELECTRONIC
5 SERVICE MANUAL DISPLAY CONTROL METHOD AND ELECTRONIC
SERVICE MANUAL DISPLAY CONTROL APPARATUS, PROGRAM
TRANSMISSION METHOD AND PROGRAM TRANSMISSION APPARATUS,
AND PROGRAM RECEPTION METHOD AND PROGRAM RECEPTION
APPARATUS

10

TECHNICAL FIELD

[0001]

The present invention relates to an electronic
service manual display program, for displaying on a
15 computer display device a service manual that provides
detailed information for use as a reference when
performing an inspection or when providing maintenance
and repair servicing for products that include an
electric circuit or an electronic circuit; a recording
20 medium on which the display program is recorded; an
electronic service manual display control method and an
electronic service manual display control apparatus; a
program transmission method and a program transmission
apparatus; and a program reception method and a program
25 reception apparatus.

BACKGROUND ART

[0002]

Conventionally, many manufacturers, including electric appliance and automobile makers, produce a variety of products in which electric systems, such as electric or electronic circuits, are used. Further, provided in correlation with these products are service manuals that furnish detailed information for use as a reference for the inspection or the maintenance and repair of the products. Ordinarily, such service manuals are supplied as printed matter, but recently, digitized service manuals (electronic service manuals), which can be browsed using PCs (Personal computers), are increasingly being provided.

15 [0003]

Multiple technical drawings, such as circuit diagrams and board diagrams, are inserted in the service manuals. Required for the technical drawings, which include circuit diagrams and board diagrams, are means for arbitrarily enlarging, reducing or moving them during browsing. Therefore, for the electronic service manuals, the use of a vector graphics data format is desired, and for this, the most common vector graphics data format, PDF (Portable Document Format), is employed.

25 [0004]

While most electronic service manuals are those obtained by directly digitizing the printed matter for the service manuals, there are also electronic service manuals for which a hyperlink, for coupling data, is
5 embedded at a predetermined location so that the display of a circuit diagram, for example, can be quickly changed to display the caption for the circuit diagram.

[0005]

Furthermore, in patent document 1, disclosed below,
10 is a parts search system wherein a server and a user terminal are connected across a network, and wherein when the server receives a product or parts search request issued by the user terminal, the server transmits to the user terminal information that is
15 related to a requested product or part.

Patent Document 1: Japanese Patent Application
Publication No. 2002-99550

[0006]

However, for an electronic service manual wherein a
20 hyperlink is embedded for coupling data, an electronic service manual producer must designate in advance data to be coupled, and moreover, must embed a hyperlink for coupling the data. At present, where there are service manuals for a large variety of products and an extensive
25 number of parts are included in the service manuals, an

enormous amount of labor is required to embed hyperlinks in these parts, and the embedding process is very difficult.

[0007]

5 The parts search system disclosed in patent document 1 permits a user to employ the user terminal to browse images based on a parts list or a service manual, and further permits the user to use a mouse to enter an instruction while concentrating on the location of a
10 targeted part for a search request. Then, a server provides an enlarged image for the location instructed by the user employing the mouse and detailed information therefor, so as to support the user's search operation. Therefore, it is impossible for an image representing
15 the location of a part to be immediately displayed simply by referring to the name of the part. Further, for service manuals for electric systems, it is demanded that the location of a predetermined part in a circuit diagram, the location of a predetermined part in a board
20 diagram, and the name and the function of a predetermined part be identified immediately; however, the above described conventional technique can not satisfy this requirement.

25 DISCLOSURE OF THE INVENTION

[0008]

To resolve the above problem, it is one objective of the present invention to provide an electronic service manual display program that can perform a superior search for information and can appropriately represent correlations between drawings, such as board diagrams and circuit diagrams, and parts included in these drawings; a recording medium on which this program is recorded; an electronic service manual display control method and an electronic service manual display control apparatus; a program transmission method and a program transmission apparatus; and a program reception method and a program reception apparatus. It is another objective of the present invention to provide an electronic service manual display program whereby, together with board diagrams and circuit diagrams, a parts table showing a list of parts included in these drawings is specially displayed so that the parts table and the drawings can be browsed at the same time, and whereby, when an arbitrary graphics primitive in a drawing or an arbitrary part in the parts table is selected, the display form of a component correlated with the selected graphics primitive or the selected part is changed both in the drawing and in the parts table, so that a user can easily identify the selected

graphics primitive or the selected part; a recording medium on which this program is recorded; an electronic service manual display control method and an electronic service manual display control apparatus; a program
5 transmission method and a program transmission apparatus; and a program reception method and a program reception apparatus. It is an additional objective of the present invention to provide an electronic service manual display program that can reduce the content
10 production labor required of an electronic service manual producer; a recording medium on which this program is recorded; an electronic service manual display control method and an electronic service manual display control apparatus; a program transmission method
15 and a program transmission apparatus; and a program reception method and a program reception apparatus.

[0009]

To achieve the above described objectives, according to the present invention, provided is an
20 electronic service manual display program, which permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing
25 the parts as components, and at the least either a board

diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit;

displaying, in a designated parts table page display area, a parts table page showing a list of the parts;

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing identification information that is designated in correlation with the selected name;

searching for the drawing designated by the thus obtained drawing identification information, and displaying the drawing in a designated drawing display area;

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the drawing, that shows the part as a graphics primitive, and when one of the parts displayed in the parts table page display area is selected, obtaining from the parts table page information the part identification information designated for the selected part and the drawing identification information, then, reading a drawing that corresponds to the drawing identification information thus obtained, and enhancing the selected part displayed in the parts table page display area;

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information correlated with each of the parts, and based on the part identification information included in the graphics primitive information for the drawing that has been read, searching for a graphics primitive for which is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table page; and

displaying the drawing that has been read in the drawing display area, and employing the search results for the graphics primitive to enhance and display the graphics primitive included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0010]

Further, to achieve the above objectives, provided is an electronic service manual display program, which permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit;

displaying, in a designated parts table page display area, a parts table page showing a list of the parts;

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that
5 corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing identification information that is designated in
10 correlation with the selected name;

searching for the drawing designated by the thus obtained drawing identification information, and displaying the drawing in a designated drawing display area;

15 establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information correlated with each of the parts, and when one of the graphics primitives in the drawing displayed
20 in the drawing display area is selected, obtaining drawing identification information that is designated for the drawing wherein the graphics primitive is designated, obtaining from the graphics primitive information the part identification information that is
25 designated for the graphics primitive, and enhancing and

displaying the graphics primitive that has been
selected; and

establishing in advance, for each of the parts
published on the parts table page, parts table page
5 information that includes part identification
information correlated with the part and drawing
identification information correlated with the drawing
that shows the part is a graphics primitive, searching
the parts table page information to find part
10 identification information that is designated for the
graphics primitive selected in the drawing, and
employing the search results to enhance and display, in
the parts table page display area, a part that
corresponds to the selected graphics primitive.

15 [0011]

Further, to achieve the above described objectives,
according to the present invention, provided is an
electronic service manual display program, which permits
a computer to provide a function for displaying, on a
20 display device, information that is related to parts and
that is used for a predetermined product constituted by
an electric circuit or an electronic circuit employing
the parts as components, and at the least either a board
diagram that represents not only a board used for the
25 predetermined product but also the parts mounted on the

board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

displaying an index page display area for
5 displaying an index page on which a list of names for,
at the least, either the board or the circuit is
published;

displaying a parts table page display area for
displaying a parts table page on which a list of the
10 parts is published;

displaying a drawing display area to display a
drawing, at the least, either a board diagram for the
board or a circuit diagram for the circuit;

displaying the index page in the index page display
15 area;

displaying the parts table page in the parts table
page display area;

establishing in advance, for each of the names
published on the index page, index page information,
20 which is drawing identification information for the
drawing corresponding to the names, and when one of the
names displayed in the index page display area is
selected, obtaining from the index page information the
drawing identification information that is designated
25 for the selected name;

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and displaying, in the drawing display area, the board
5 diagram or the circuit diagram that corresponds to the drawing identification information;

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the
10 drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information;

15 establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information corresponding to each of the parts, and when one of the graphics primitives in the drawing displayed
20 in the drawing display area is selected, obtaining drawing identification information designated for the drawing in which the graphics primitive is selected, obtaining from the graphics primitive information the part identification information designated for the
25 selected graphics primitive, and enhancing and

displaying the graphics primitive that is selected;

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification

5 information corresponding to the part and drawing identification information corresponding to the drawing that shows the part as a graphics primitive, searching for the parts table page information that includes the same part identification information as designated for
10 the graphics primitive selected in the drawing, obtaining the drawing identification information from the parts table page information that has been found, and enhancing and displaying, in the parts table page display area, a part corresponding to the graphics
15 primitive that is selected; and

when the drawing identification information obtained from the parts table page information is information for a designation of both the board diagram and the circuit diagram, and when drawings are shown in
20 the first and the second display areas, obtaining drawing identification information for a drawing displayed in one display area that is not a location whereat a drawing that includes the selected graphics primitive is shown, and when the drawing identification
25 information for the drawing in the display area is

included in the drawing identification information
obtained from the parts table page information,
enhancing and displaying a graphics primitive in the
display area that corresponds to the graphics primitive
5 that has been selected, or when the drawing
identification information for the drawing in the
display area is not included in the drawing
identification information obtained from the parts table
page information, obtaining drawing information
10 identification, from the drawing identification
information acquired from the parts table page
information, that differs from the drawing
identification information provided for the drawing
shown in the remaining display area, reading and
15 displaying, in the display area, the drawing that
corresponds to the drawing identification information,
and enhancing and displaying a graphics primitive in the
display area that corresponds to the graphics primitive
that is selected.

20 [0012]

Moreover, to achieve the above described objectives,
according to the present invention, provided is a
recording medium on which recorded is an electronic
service manual display program, which permits a computer
25 to provide a function for displaying, on a display

device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board
5 diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

10 displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit;

displaying, in a designated parts table page display area, a parts table page showing a list of the
15 parts;

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the
20 board or a circuit diagram for the circuit, that corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing identification information that is designated in
25 correlation with the selected name;

searching for the drawing designated by the thus
obtained drawing identification information, and
displaying the drawing in a designated drawing display
area;

5 establishing in advance, for each of the parts
published on the parts table page, parts table page
information that includes part identification
information correlated with the part and drawing
identification information, which is correlated with the
10 drawing, that shows the part as a graphics primitive,
and when one of the parts displayed in the parts table
page display area is selected, obtaining from the parts
table page information the part identification
information designated for the selected part and the
15 drawing identification information, then, reading a
drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area;

 establishing in advance, for each graphics
20 primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
information correlated with each of the parts, and based
on the part identification information included in the
graphics primitive information for the drawing that has
25 been read, searching for a graphics primitive for which

is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table page; and

5 displaying the drawing that has been read in the drawing display area, and employing the search results for the graphics primitive to enhance and display the graphics primitive included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0013]

Also, to achieve the above objectives, provided is a recording medium on which recorded is an electronic service manual display program, which permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

25 displaying, in a designated index page display area,

an index page showing a list of names for, at the least,
either the board or the circuit;

displaying, in a designated parts table page
display area, a parts table page showing a list of the
5 parts;

establishing in advance, for each of the names
published on the index page, index page information,
which is drawing identification information for a
drawing, at the least either a board diagram for the
10 board or a circuit diagram for the circuit, that
corresponds to the name, and when one of the names
displayed on the index page display area is selected,
obtaining from the index page information the drawing
identification information that is designated in
15 correlation with the selected name;

searching for the drawing designated by the thus
obtained drawing identification information, and
displaying the drawing in a designated drawing display
area;

20 establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
information correlated with each of the parts, and when
one of the graphics primitives in the drawing displayed
25 in the drawing display area is selected, obtaining

drawing identification information that is designated
for the drawing wherein the graphics primitive is
designated, obtaining from the graphics primitive
information the part identification information that is
5 designated for the graphics primitive, and enhancing and
displaying the graphics primitive that has been
selected; and

establishing in advance, for each of the parts
published on the parts table page, parts table page
10 information that includes part identification
information correlated with the part and drawing
identification information correlated with the drawing
that shows the part is a graphics primitive, searching
the parts table page information to find part
15 identification information that is designated for the
graphics primitive selected in the drawing, and
employing the search results to enhance and display, in
the parts table page display area, a part that
corresponds to the selected graphics primitive.

20 [0014]

Further, to achieve the above described objectives,
according to the present invention, provided is a
recording medium on which recorded is an electronic
service manual display program, which permits a computer
25 to provide a function for displaying, on a display

device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board
5 diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

10 displaying an index page display area for displaying an index page on which a list of names for, at the least, either the board or the circuit is published;

 displaying a parts table page display area for
15 displaying a parts table page on which a list of the parts is published;

 displaying a drawing display area to display a drawing, at the least, either a board diagram for the board or a circuit diagram for the circuit;

20 displaying the index page in the index page display area;

 displaying the parts table page in the parts table page display area;

 establishing in advance, for each of the names
25 published on the index page, index page information,

which is drawing identification information for the drawing corresponding to the names, and when one of the names displayed in the index page display area is selected, obtaining from the index page information the drawing identification information that is designated
5 for the selected name;

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and
10 displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information;

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the
15 drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification
20 information;

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information corresponding to each of the parts, and when
25 one of the graphics primitives in the drawing displayed

in the drawing display area is selected, obtaining drawing identification information designated for the drawing in which the graphics primitive is selected, obtaining from the graphics primitive information the part identification information designated for the selected graphics primitive, and enhancing and displaying the graphics primitive that is selected;

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information corresponding to the part and drawing identification information corresponding to the drawing that shows the part as a graphics primitive, searching for the parts table page information that includes the same part identification information as designated for the graphics primitive selected in the drawing, obtaining the drawing identification information from the parts table page information that has been found, and enhancing and displaying, in the parts table page display area, a part corresponding to the graphics primitive that is selected; and

when the drawing identification information obtained from the parts table page information is information for a designation of both the board diagram and the circuit diagram, and when drawings are shown in

the first and the second display areas, obtaining drawing identification information for a drawing displayed in one display area that is not a location whereat a drawing that includes the selected graphics primitive is shown, and when the drawing identification information for the drawing in the display area is included in the drawing identification information obtained from the parts table page information, enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that has been selected, or when the drawing identification information for the drawing in the display area is not included in the drawing identification information obtained from the parts table page information, obtaining drawing information identification, from the drawing identification information acquired from the parts table page information, that differs from the drawing identification information provided for the drawing shown in the remaining display area, reading and displaying, in the display area, the drawing that corresponds to the drawing identification information, and enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that is selected.

[0015]

Furthermore, to achieve the above described objectives, according to the present invention, provided is an electronic service manual display control method,
5 for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents
10 not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising steps of:

displaying, in a designated index page display area,
15 an index page showing a list of names for, at the least, either the board or the circuit;

displaying, in a designated parts table page display area, a parts table page showing a list of the parts;

20 establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that
25 corresponds to the name, and when one of the names

displayed on the index page display area is selected, obtaining from the index page information the drawing identification information that is designated in correlation with the selected name;

5 searching for the drawing designated by the thus obtained drawing identification information, and displaying the drawing in a designated drawing display area;

 establishing in advance, for each of the parts
10 published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the drawing, that shows the part as a graphics primitive,
15 and when one of the parts displayed in the parts table page display area is selected, obtaining from the parts table page information the part identification information designated for the selected part and the drawing identification information, then, reading a
20 drawing that corresponds to the drawing identification information thus obtained, and enhancing the selected part displayed in the parts table page display area;

 establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics
25 primitive information, which is part identification

information correlated with each of the parts, and based on the part identification information included in the graphics primitive information for the drawing that has been read, searching for a graphics primitive for which is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table page; and

displaying the drawing that has been read in the drawing display area, and employing the search results for the graphics primitive to enhance and display the graphics primitive included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0016]

Further, to achieve the above objectives, provided is an electronic service manual display control method, for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board,

comprising the steps of:

displaying, in a designated index page display area,
an index page showing a list of names for, at the least,
either the board or the circuit;

5 displaying, in a designated parts table page
display area, a parts table page showing a list of the
parts;

establishing in advance, for each of the names
published on the index page, index page information,
10 which is drawing identification information for a
drawing, at the least either a board diagram for the
board or a circuit diagram for the circuit, that
corresponds to the name, and when one of the names
displayed on the index page display area is selected,
15 obtaining from the index page information the drawing
identification information that is designated in
correlation with the selected name;

searching for the drawing designated by the thus
obtained drawing identification information, and
20 displaying the drawing in a designated drawing display
area;

establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
25 information correlated with each of the parts, and when

one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining drawing identification information that is designated for the drawing wherein the graphics primitive is designated, obtaining from the graphics primitive information the part identification information that is designated for the graphics primitive, and enhancing and displaying the graphics primitive that has been selected; and

10 establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information correlated with the drawing that shows the part is a graphics primitive, searching

15 the parts table page information to find part identification information that is designated for the graphics primitive selected in the drawing, and employing the search results to enhance and display, in

20 the parts table page display area, a part that corresponds to the selected graphics primitive.

[0017]

Further, to achieve the above described objectives, according to the present invention, provided is an

25 electronic service manual display control method, for

displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising the steps of:

10 displaying an index page display area for displaying an index page on which a list of names for, at the least, either the board or the circuit is published;

15 displaying a parts table page display area for displaying a parts table page on which a list of the parts is published;

 displaying a drawing display area to display a drawing, at the least, either a board diagram for the board or a circuit diagram for the circuit;

20 displaying the index page in the index page display area;

 displaying the parts table page in the parts table page display area;

25 establishing in advance, for each of the names published on the index page, index page information,

which is drawing identification information for the drawing corresponding to the names, and when one of the names displayed in the index page display area is selected, obtaining from the index page information the drawing identification information that is designated
5 for the selected name;

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and
10 displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information;

when the drawing identification information thus obtained is information for a designation of both the
15 board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification
20 information;

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information corresponding to each of the parts, and when
25 one of the graphics primitives in the drawing displayed

in the drawing display area is selected, obtaining drawing identification information designated for the drawing in which the graphics primitive is selected, obtaining from the graphics primitive information the part identification information designated for the selected graphics primitive, and enhancing and displaying the graphics primitive that is selected;

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information corresponding to the part and drawing identification information corresponding to the drawing that shows the part as a graphics primitive, searching for the parts table page information that includes the same part identification information as designated for the graphics primitive selected in the drawing, obtaining the drawing identification information from the parts table page information that has been found, and enhancing and displaying, in the parts table page display area, a part corresponding to the graphics primitive that is selected; and

when the drawing identification information obtained from the parts table page information is information for a designation of both the board diagram and the circuit diagram, and when drawings are shown in

the first and the second display areas, obtaining drawing identification information for a drawing displayed in one display area that is not a location whereat a drawing that includes the selected graphics primitive is shown, and when the drawing identification information for the drawing in the display area is included in the drawing identification information obtained from the parts table page information, enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that has been selected, or when the drawing identification information for the drawing in the display area is not included in the drawing identification information obtained from the parts table page information, obtaining drawing information identification, from the drawing identification information acquired from the parts table page information, that differs from the drawing identification information provided for the drawing shown in the remaining display area, reading and displaying, in the display area, the drawing that corresponds to the drawing identification information, and enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that is selected.

[0018]

Furthermore, to achieve the above described objectives, according to the present invention, provided is an electronic service manual display control
5 apparatus, for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that
10 represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising:

means for displaying, in a designated index page
15 display area, an index page showing a list of names for, at the least, either the board or the circuit;

means for displaying, in a designated parts table page display area, a parts table page showing a list of the parts;

20 means for establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that
25 corresponds to the name, and for, when one of the names

displayed on the index page display area is selected,
obtaining from the index page information the drawing
identification information that is designated in
correlation with the selected name;

5 means for searching for the drawing designated by
the thus obtained drawing identification information,
and for displaying the drawing in a designated drawing
display area;

 means for establishing in advance, for each of the
10 parts published on the parts table page, parts table
page information that includes part identification
information correlated with the part and drawing
identification information, which is correlated with the
drawing, that shows the part as a graphics primitive,
15 and for, when one of the parts displayed in the parts
table page display area is selected, obtaining from the
parts table page information the part identification
information designated for the selected part and the
drawing identification information, then, reading a
20 drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area;

 means for establishing in advance, for each
graphics primitive that is a constituent of the drawing,
25 graphics primitive information, which is part

identification information correlated with each of the parts, and for, based on the part identification information included in the graphics primitive information for the drawing that has been read,
5 searching for a graphics primitive for which is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table page; and

10 means for displaying the drawing that has been read in the drawing display area, and for employing the search results for the graphics primitive to enhance and display the graphics primitive included in the drawing that has been read and that corresponds to the part
15 selected on the parts table page.

[0019]

Further, to achieve the above objectives, provided is an electronic service manual display control apparatus, for displaying, on a display device,
20 information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined
25 product but also the parts mounted on the board, or a

circuit diagram that represents a circuit provided on the board, comprising:

means for displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit;

means for displaying, in a designated parts table page display area, a parts table page showing a list of the parts;

means for establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that corresponds to the name, and for, when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing identification information that is designated in correlation with the selected name;

means for searching for the drawing designated by the thus obtained drawing identification information, and for displaying the drawing in a designated drawing display area;

means for establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part

identification information correlated with each of the parts, and for, when one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining drawing identification information that is designated for the drawing wherein the graphics primitive is designated, obtaining from the graphics primitive information the part identification information that is designated for the graphics primitive, and enhancing and displaying the graphics primitive that has been selected; and

means for establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information correlated with the drawing that shows the part is a graphics primitive, for searching the parts table page information to find part identification information that is designated for the graphics primitive selected in the drawing, and for employing the search results to enhance and display, in the parts table page display area, a part that corresponds to the selected graphics primitive.

[0020]

Further, to achieve the above described objectives, according to the present invention, provided is an

electronic service manual display control apparatus, for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an
5 electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board,
10 comprising:

means for displaying an index page display area for displaying an index page on which a list of names for, at the least, either the board or the circuit is published;

15 means for displaying a parts table page display area for displaying a parts table page on which a list of the parts is published;

means for displaying a drawing display area to display a drawing, at the least, either a board diagram
20 for the board or a circuit diagram for the circuit;

means for displaying the index page in the index page display area;

means for displaying the parts table page in the parts table page display area;

25 means for establishing in advance, for each of the

names published on the index page, index page
information, which is drawing identification information
for the drawing corresponding to the names, and for,
when one of the names displayed in the index page
5 display area is selected, obtaining from the index page
information the drawing identification information that
is designated for the selected name;

means for, when the thus obtained drawing
identification information is information for a
10 designation of the board diagram or the circuit diagram,
searching for and displaying, in the drawing display
area, the board diagram or the circuit diagram that
corresponds to the drawing identification information;

means for, when the drawing identification
15 information thus obtained is information for a
designation of both the board diagram and the circuit
diagram, dividing the drawing display area into first
and second display areas, and for searching for and
displaying, in the first and second display areas, the
20 board diagram and the circuit diagram that correspond to
the drawing identification information;

means for establishing in advance, for each
graphics primitive that is a constituent of the drawing,
graphics primitive information, which is part
25 identification information corresponding to each of the

parts, and for, when one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining drawing identification information designated for the drawing in which the graphics
5 primitive is selected, obtaining from the graphics primitive information the part identification information designated for the selected graphics primitive, and enhancing and displaying the graphics primitive that is selected;

10 means for establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information corresponding to the part and drawing identification information corresponding to the drawing
15 that shows the part as a graphics primitive, for searching for the parts table page information that includes the same part identification information as designated for the graphics primitive selected in the drawing, for obtaining the drawing identification
20 information from the parts table page information that has been found, and for enhancing and displaying, in the parts table page display area, a part corresponding to the graphics primitive that is selected; and

means for, when the drawing identification
25 information obtained from the parts table page

information is information for a designation of both the board diagram and the circuit diagram, and when drawings are shown in the first and the second display areas, obtaining drawing identification information for a
5 drawing displayed in one display area that is not a location whereat a drawing that includes the selected graphics primitive is shown, and for, when the drawing identification information for the drawing in the display area is included in the drawing identification
10 information obtained from the parts table page information, enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that has been selected, or for, when the drawing identification information for the drawing
15 in the display area is not included in the drawing identification information obtained from the parts table page information, obtaining drawing information identification, from the drawing identification information acquired from the parts table page
20 information, that differs from the drawing identification information provided for the drawing shown in the remaining display area, reading and displaying, in the display area, the drawing that corresponds to the drawing identification information,
25 and enhancing and displaying a graphics primitive in the

display area that corresponds to the graphics primitive that is selected.

[0021]

In addition, to achieve the above described
5 objectives, according to the present invention, provided is a program transmission method, for transmitting an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and
10 that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the
15 board, or a circuit diagram that represents a circuit provided on the board, comprising the steps of:

converting the electronic service manual display program into a digital signal sequence, for a communication line or a network, with an added header;
20 and

initiating employment of a communication protocol with a partner station across the communication line or the network and transmitting the digital signal sequence, whereby the electronic service manual display
25 program includes the steps of

displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit,

displaying, in a designated parts table page
5 display area, a parts table page showing a list of the parts,

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a
10 drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing
15 identification information that is designated in correlation with the selected name,

searching for the drawing designated by the thus obtained drawing identification information, and displaying the drawing in a designated drawing display
20 area,

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing
25 identification information, which is correlated with the

drawing, that shows the part as a graphics primitive,
and when one of the parts displayed in the parts table
page display area is selected, obtaining from the parts
table page information the part identification
5 information designated for the selected part and the
drawing identification information, then, reading a
drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area,
10 establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
information correlated with each of the parts, and based
on the part identification information included in the
15 graphics primitive information for the drawing that has
been read, searching for a graphics primitive for which
is designated the same part identification information
as the part identification information that has been
designated for the part selected on the parts table page,
20 and

displaying the drawing that has been read in
the drawing display area, and employing the search
results for the graphics primitive to enhance and
display the graphics primitive included in the drawing
25 that has been read and that corresponds to the part

selected on the parts table page.

[0022]

Further, to achieve the above objectives, provided
is a program transmission method, for transmitting an
5 electronic service manual display program that permits a
computer to provide a function for displaying, on a
display device, information that is related to parts and
that is used for a predetermined product constituted by
an electric circuit or an electronic circuit employing
10 the parts as components, and at the least either a board
diagram that represents not only a board used for the
predetermined product but also the parts mounted on the
board, or a circuit diagram that represents a circuit
provided on the board, comprising the steps of:

15 converting the electronic service manual display
program into a digital signal sequence, for a
communication line or a network, with an added header;
and

initiating employment of a communication protocol
20 with a partner station across the communication line or
the network and transmitting the digital signal sequence,
whereby the electronic service manual display
program includes the steps of

displaying, in a designated index page display
25 area, an index page showing a list of names for, at the

least, either the board or the circuit,

displaying, in a designated parts table page display area, a parts table page showing a list of the parts,

5 establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that
10 corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing identification information that is designated in correlation with the selected name,

15 searching for the drawing designated by the thus obtained drawing identification information, and displaying the drawing in a designated drawing display area,

 establishing in advance, for each graphics
20 primitive that is a constituent of the drawing, graphics primitive information, which is part identification information correlated with each of the parts, and when one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining
25 drawing identification information that is designated

for the drawing wherein the graphics primitive is designated, obtaining from the graphics primitive information the part identification information that is designated for the graphics primitive, and enhancing and displaying the graphics primitive that has been selected, and

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information correlated with the drawing that shows the part is a graphics primitive, searching the parts table page information to find part identification information that is designated for the graphics primitive selected in the drawing, and employing the search results to enhance and display, in the parts table page display area, a part that corresponds to the selected graphics primitive.

[0023]

Further, to achieve the above described objectives, according to the present invention, provided is a program transmission method, for transmitting an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and

that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the
5 predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising the steps of:

converting the electronic service manual display program into a digital signal sequence, for a
10 communication line or a network, with an added header;
and

initiating employment of a communication protocol with a partner station across the communication line or the network and transmitting the digital signal sequence,
15 whereby the electronic service manual display program includes the steps of

displaying an index page display area for displaying an index page on which a list of names for, at the least, either the board or the circuit is
20 published,

displaying a parts table page display area for displaying a parts table page on which a list of the parts is published,

displaying a drawing display area to display a
25 drawing, at the least, either a board diagram for the

board or a circuit diagram for the circuit,

displaying the index page in the index page
display area,

displaying the parts table page in the parts
5 table page display area,

establishing in advance, for each of the names
published on the index page, index page information,
which is drawing identification information for the
drawing corresponding to the names, and when one of the
10 names displayed in the index page display area is
selected, obtaining from the index page information the
drawing identification information that is designated
for the selected name,

when the thus obtained drawing identification
15 information is information for a designation of the
board diagram or the circuit diagram, searching for and
displaying, in the drawing display area, the board
diagram or the circuit diagram that corresponds to the
drawing identification information,

20 when the drawing identification information
thus obtained is information for a designation of both
the board diagram and the circuit diagram, dividing the
drawing display area into first and second display areas
and searching for and displaying, in the first and
25 second display areas, the board diagram and the circuit

diagram that correspond to the drawing identification information,

5 establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information corresponding to each of the parts, and when one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining drawing identification information designated for the
10 drawing in which the graphics primitive is selected, obtaining from the graphics primitive information the part identification information designated for the selected graphics primitive, and enhancing and displaying the graphics primitive that is selected,

15 establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information corresponding to the part and drawing identification information corresponding to the drawing
20 that shows the part as a graphics primitive, searching for the parts table page information that includes the same part identification information as designated for the graphics primitive selected in the drawing, obtaining the drawing identification information from
25 the parts table page information that has been found,

and enhancing and displaying, in the parts table page display area, a part corresponding to the graphics primitive that is selected, and

when the drawing identification information
5 obtained from the parts table page information is information for a designation of both the board diagram and the circuit diagram, and when drawings are shown in the first and the second display areas, obtaining drawing identification information for a drawing
10 displayed in one display area that is not a location whereat a drawing that includes the selected graphics primitive is shown, and when the drawing identification information for the drawing in the display area is included in the drawing identification information
15 obtained from the parts table page information, enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that has been selected, or when the drawing identification information for the drawing in the
20 display area is not included in the drawing identification information obtained from the parts table page information, obtaining drawing information identification, from the drawing identification information acquired from the parts table page
25 information, that differs from the drawing

identification information provided for the drawing
shown in the remaining display area, reading and
displaying, in the display area, the drawing that
corresponds to the drawing identification information,
5 and enhancing and displaying a graphics primitive in the
display area that corresponds to the graphics primitive
that is selected.

[0024]

In addition, to achieve the above described
10 objectives, according to the present invention, provided
is a program transmission apparatus, for transmitting an
electronic service manual display program that permits a
computer to provide a function for displaying, on a
display device, information that is related to parts and
15 that is used for a predetermined product constituted by
an electric circuit or an electronic circuit employing
the parts as components, and at the least either a board
diagram that represents not only a board used for the
predetermined product but also the parts mounted on the
20 board, or a circuit diagram that represents a circuit
provided on the board, comprising:

means for converting the electronic service manual
display program into a digital signal sequence, for a
communication line or a network, with an added header;
25 and

means for initiating employment of a communication protocol with a partner station across the communication line or the network and transmitting the digital signal sequence,

5 wherein the electronic service manual display program includes the steps of

 displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit,

10 displaying, in a designated parts table page display area, a parts table page showing a list of the parts,

 establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that corresponds to the name, and when one of the names displayed on the index page display area is selected, 15 obtaining from the index page information the drawing identification information that is designated in correlation with the selected name,

 searching for the drawing designated by the thus obtained drawing identification information, and 25 displaying the drawing in a designated drawing display

area,

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the drawing, that shows the part as a graphics primitive, and when one of the parts displayed in the parts table page display area is selected, obtaining from the parts table page information the part identification information designated for the selected part and the drawing identification information, then, reading a drawing that corresponds to the drawing identification information thus obtained, and enhancing the selected part displayed in the parts table page display area,

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information correlated with each of the parts, and based on the part identification information included in the graphics primitive information for the drawing that has been read, searching for a graphics primitive for which is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table page,

and

displaying the drawing that has been read in
the drawing display area, and employing the search
results for the graphics primitive to enhance and
5 display the graphics primitive included in the drawing
that has been read and that corresponds to the part
selected on the parts table page.

[0025]

Further, to achieve the above objectives, provided
10 is a program transmission apparatus, for transmitting an
electronic service manual display program that permits a
computer to provide a function for displaying, on a
display device, information that is related to parts and
that is used for a predetermined product constituted by
15 an electric circuit or an electronic circuit employing
the parts as components, and at the least either a board
diagram that represents not only a board used for the
predetermined product but also the parts mounted on the
board, or a circuit diagram that represents a circuit
20 provided on the board, comprising:

means for converting the electronic service manual
display program into a digital signal sequence, for a
communication line or a network, with an added header;
and

25 means for initiating employment of a communication

protocol with a partner station across the communication line or the network and transmitting the digital signal sequence,

wherein the electronic service manual display
5 program includes the steps of

displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit,

displaying, in a designated parts table page
10 display area, a parts table page showing a list of the parts,

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a
15 drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing
20 identification information that is designated in correlation with the selected name,

searching for the drawing designated by the thus obtained drawing identification information, and displaying the drawing in a designated drawing display
25 area,

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information correlated with each of the parts, and when
5 one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining drawing identification information that is designated for the drawing wherein the graphics primitive is designated, obtaining from the graphics primitive
10 information the part identification information that is designated for the graphics primitive, and enhancing and displaying the graphics primitive that has been selected, and

establishing in advance, for each of the parts
15 published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information correlated with the drawing that shows the part is a graphics primitive, searching
20 the parts table page information to find part identification information that is designated for the graphics primitive selected in the drawing, and employing the search results to enhance and display, in the parts table page display area, a part that
25 corresponds to the selected graphics primitive.

[0026]

Further, to achieve the above described objectives, according to the present invention, provided is a program transmission apparatus, for transmitting an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising:

means for converting the electronic service manual display program into a digital signal sequence, for a communication line or a network, with an added header; and

means for initiating employment of a communication protocol with a partner station across the communication line or the network and transmitting the digital signal sequence,

wherein the electronic service manual display program includes the steps of

displaying an index page display area for

displaying an index page on which a list of names for,
at the least, either the board or the circuit is
published,

displaying a parts table page display area for
5 displaying a parts table page on which a list of the
parts is published,

displaying a drawing display area to display a
drawing, at the least, either a board diagram for the
board or a circuit diagram for the circuit,

10 displaying the index page in the index page
display area,

displaying the parts table page in the parts
table page display area,

establishing in advance, for each of the names
15 published on the index page, index page information,
which is drawing identification information for the
drawing corresponding to the names, and when one of the
names displayed in the index page display area is
selected, obtaining from the index page information the
20 drawing identification information that is designated
for the selected name,

when the thus obtained drawing identification
information is information for a designation of the
board diagram or the circuit diagram, searching for and
25 displaying, in the drawing display area, the board

diagram or the circuit diagram that corresponds to the drawing identification information,

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information,

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information corresponding to each of the parts, and when one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining drawing identification information designated for the drawing in which the graphics primitive is selected, obtaining from the graphics primitive information the part identification information designated for the selected graphics primitive, and enhancing and displaying the graphics primitive that is selected,

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification

information corresponding to the part and drawing
identification information corresponding to the drawing
that shows the part as a graphics primitive, searching
for the parts table page information that includes the
5 same part identification information as designated for
the graphics primitive selected in the drawing,
obtaining the drawing identification information from
the parts table page information that has been found,
and enhancing and displaying, in the parts table page
10 display area, a part corresponding to the graphics
primitive that is selected, and

when the drawing identification information
obtained from the parts table page information is
information for a designation of both the board diagram
15 and the circuit diagram, and when drawings are shown in
the first and the second display areas, obtaining
drawing identification information for a drawing
displayed in one display area that is not a location
whereat a drawing that includes the selected graphics
20 primitive is shown, and when the drawing identification
information for the drawing in the display area is
included in the drawing identification information
obtained from the parts table page information,
enhancing and displaying a graphics primitive in the
25 display area that corresponds to the graphics primitive

that has been selected, or when the drawing
identification information for the drawing in the
display area is not included in the drawing
identification information obtained from the parts table
5 page information, obtaining drawing information
identification, from the drawing identification
information acquired from the parts table page
information, that differs from the drawing
identification information provided for the drawing
10 shown in the remaining display area, reading and
displaying, in the display area, the drawing that
corresponds to the drawing identification information,
and enhancing and displaying a graphics primitive in the
display area that corresponds to the graphics primitive
15 that is selected.

[0027]

In addition, to achieve the above described
objectives, according to the present invention, provided
is a program reception method, for receiving an
20 electronic service manual display program that permits a
computer to provide a function for displaying, on a
display device, information that is related to parts and
that is used for a predetermined product constituted by
an electric circuit or an electronic circuit employing
25 the parts as components, and at the least either a board

diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising the steps of:

5 initiating employment of a communication protocol with a partner station across a communication line or a network and receiving a digital signal sequence; and

 removing headers from the digital signal sequence and converting the digital signal sequence used for a
10 communication line or a network into the original electronic service manual display program,

 whereby the electronic service manual display program includes the steps of

 displaying, in a designated index page display
15 area, an index page showing a list of names for, at the least, either the board or the circuit,

 displaying, in a designated parts table page display area, a parts table page showing a list of the parts,

20 establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that
25 corresponds to the name, and when one of the names

displayed on the index page display area is selected,
obtaining from the index page information the drawing
identification information that is designated in
correlation with the selected name,

5 searching for the drawing designated by the
thus obtained drawing identification information, and
displaying the drawing in a designated drawing display
area,

 establishing in advance, for each of the parts
10 published on the parts table page, parts table page
information that includes part identification
information correlated with the part and drawing
identification information, which is correlated with the
drawing, that shows the part as a graphics primitive,
15 and when one of the parts displayed in the parts table
page display area is selected, obtaining from the parts
table page information the part identification
information designated for the selected part and the
drawing identification information, then, reading a
20 drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area,

 establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
25 primitive information, which is part identification

information correlated with each of the parts, and based on the part identification information included in the graphics primitive information for the drawing that has been read, searching for a graphics primitive for which is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table page, and

displaying the drawing that has been read in the drawing display area, and employing the search results for the graphics primitive to enhance and display the graphics primitive included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0028]

Further, to achieve the above objectives, provided is a program reception method, for receiving an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the

board, or a circuit diagram that represents a circuit provided on the board, comprising the steps of:

initiating employment of a communication protocol with a partner station across a communication line or a network and receiving a digital signal sequence; and

removing headers from the digital signal sequence and converting the digital signal sequence used for a communication line or a network into the original electronic service manual display program,

whereby the electronic service manual display program includes the steps of

displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit,

displaying, in a designated parts table page display area, a parts table page showing a list of the parts,

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing

identification information that is designated in
correlation with the selected name,

searching for the drawing designated by the
thus obtained drawing identification information, and
5 displaying the drawing in a designated drawing display
area,

establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
10 information correlated with each of the parts, and when
one of the graphics primitives in the drawing displayed
in the drawing display area is selected, obtaining
drawing identification information that is designated
for the drawing wherein the graphics primitive is
15 designated, obtaining from the graphics primitive
information the part identification information that is
designated for the graphics primitive, and enhancing and
displaying the graphics primitive that has been selected,
and

20 establishing in advance, for each of the parts
published on the parts table page, parts table page
information that includes part identification
information correlated with the part and drawing
identification information correlated with the drawing
25 that shows the part is a graphics primitive, searching

the parts table page information to find part
identification information that is designated for the
graphics primitive selected in the drawing, and
employing the search results to enhance and display, in
5 the parts table page display area, a part that
corresponds to the selected graphics primitive.

[0029]

Further, to achieve the above described objectives,
according to the present invention, provided is a
10 program reception method, for receiving an electronic
service manual display program that permits a computer
to provide a function for displaying, on a display
device, information that is related to parts and that is
used for a predetermined product constituted by an
15 electric circuit or an electronic circuit employing the
parts as components, and at the least either a board
diagram that represents not only a board used for the
predetermined product but also the parts mounted on the
board, or a circuit diagram that represents a circuit
20 provided on the board, comprising the steps of:

initiating employment of a communication protocol
with a partner station across a communication line or a
network and receiving a digital signal sequence; and

removing headers from the digital signal sequence
25 and converting the digital signal sequence used for a

communication line or a network into the original
electronic service manual display program,

whereby the electronic service manual display
program includes the steps of

5 displaying an index page display area for
displaying an index page on which a list of names for,
at the least, either the board or the circuit is
published,

 displaying a parts table page display area for
10 displaying a parts table page on which a list of the
parts is published,

 displaying a drawing display area to display a
drawing, at the least, either a board diagram for the
board or a circuit diagram for the circuit,

15 displaying the index page in the index page
display area,

 displaying the parts table page in the parts
table page display area,

 establishing in advance, for each of the names
20 published on the index page, index page information,
which is drawing identification information for the
drawing corresponding to the names, and when one of the
names displayed in the index page display area is
selected, obtaining from the index page information the
25 drawing identification information that is designated

for the selected name,

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information,

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information,

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information corresponding to each of the parts, and when one of the graphics primitives in the drawing displayed in the drawing display area is selected, obtaining drawing identification information designated for the drawing in which the graphics primitive is selected, obtaining from the graphics primitive information the part identification information designated for the

selected graphics primitive, and enhancing and
displaying the graphics primitive that is selected,
establishing in advance, for each of the parts
published on the parts table page, parts table page
5 information that includes part identification
information corresponding to the part and drawing
identification information corresponding to the drawing
that shows the part as a graphics primitive, searching
for the parts table page information that includes the
10 same part identification information as designated for
the graphics primitive selected in the drawing,
obtaining the drawing identification information from
the parts table page information that has been found,
and enhancing and displaying, in the parts table page
15 display area, a part corresponding to the graphics
primitive that is selected, and

when the drawing identification information
obtained from the parts table page information is
information for a designation of both the board diagram
20 and the circuit diagram, and when drawings are shown in
the first and the second display areas, obtaining
drawing identification information for a drawing
displayed in one display area that is not a location
whereat a drawing that includes the selected graphics
25 primitive is shown, and when the drawing identification

information for the drawing in the display area is included in the drawing identification information obtained from the parts table page information, enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that has been selected, or when the drawing identification information for the drawing in the display area is not included in the drawing identification information obtained from the parts table page information, obtaining drawing information identification, from the drawing identification information acquired from the parts table page information, that differs from the drawing identification information provided for the drawing shown in the remaining display area, reading and displaying, in the display area, the drawing that corresponds to the drawing identification information, and enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that is selected.

[0030]

In addition, to achieve the above described objectives, according to the present invention, provided is a program reception apparatus, for receiving an electronic service manual display program that permits a

computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising:

10 means for initiating employment of a communication protocol with a partner station across a communication line or a network and receiving a digital signal sequence; and

 means for removing headers from the digital signal sequence and converting the digital signal sequence used for a communication line or a network into the original electronic service manual display program,

 wherein the electronic service manual display program includes the steps of

20 displaying, in a designated index page display area, an index page showing a list of names for, at the least, either the board or the circuit,

 displaying, in a designated parts table page display area, a parts table page showing a list of the parts,

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for a drawing, at the least either a board diagram for the board or a circuit diagram for the circuit, that
5 corresponds to the name, and when one of the names displayed on the index page display area is selected, obtaining from the index page information the drawing identification information that is designated in
10 correlation with the selected name,

searching for the drawing designated by the thus obtained drawing identification information, and displaying the drawing in a designated drawing display area,

15 establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the
20 drawing, that shows the part as a graphics primitive, and when one of the parts displayed in the parts table page display area is selected, obtaining from the parts table page information the part identification information designated for the selected part and the
25 drawing identification information, then, reading a

drawing that corresponds to the drawing identification information thus obtained, and enhancing the selected part displayed in the parts table page display area,

establishing in advance, for each graphics
5 primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
information correlated with each of the parts, and based
on the part identification information included in the
graphics primitive information for the drawing that has
10 been read, searching for a graphics primitive for which
is designated the same part identification information
as the part identification information that has been
designated for the part selected on the parts table page,
and

15 displaying the drawing that has been read in
the drawing display area, and employing the search
results for the graphics primitive to enhance and
display the graphics primitive included in the drawing
that has been read and that corresponds to the part
20 selected on the parts table page.

[0031]

Further, to achieve the above objectives, provided
is a program reception apparatus, for receiving an
electronic service manual display program that permits a
25 computer to provide a function for displaying, on a

display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board
5 diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising:

means for initiating employment of a communication
10 protocol with a partner station across a communication line or a network and receiving a digital signal sequence; and

means for removing headers from the digital signal sequence and converting the digital signal sequence used
15 for a communication line or a network into the original electronic service manual display program,

wherein the electronic service manual display program includes the steps of

displaying, in a designated index page display
20 area, an index page showing a list of names for, at the least, either the board or the circuit,

displaying, in a designated parts table page display area, a parts table page showing a list of the parts,

25 establishing in advance, for each of the names

published on the index page, index page information,
which is drawing identification information for a
drawing, at the least either a board diagram for the
board or a circuit diagram for the circuit, that
5 corresponds to the name, and when one of the names
displayed on the index page display area is selected,
obtaining from the index page information the drawing
identification information that is designated in
correlation with the selected name,
10 searching for the drawing designated by the
thus obtained drawing identification information, and
displaying the drawing in a designated drawing display
area,
establishing in advance, for each graphics
15 primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
information correlated with each of the parts, and when
one of the graphics primitives in the drawing displayed
in the drawing display area is selected, obtaining
20 drawing identification information that is designated
for the drawing wherein the graphics primitive is
designated, obtaining from the graphics primitive
information the part identification information that is
designated for the graphics primitive, and enhancing and
25 displaying the graphics primitive that has been selected,

and

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information correlated with the drawing that shows the part is a graphics primitive, searching the parts table page information to find part identification information that is designated for the graphics primitive selected in the drawing, and employing the search results to enhance and display, in the parts table page display area, a part that corresponds to the selected graphics primitive.

[0032]

Further, to achieve the above described objectives, according to the present invention, provided is a program reception apparatus, for receiving an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the

board, or a circuit diagram that represents a circuit provided on the board, comprising:

means for initiating employment of a communication protocol with a partner station across a communication
5 line or a network and receiving a digital signal sequence; and

means for removing headers from the digital signal sequence and converting the digital signal sequence used for a communication line or a network into the original
10 electronic service manual display program,

wherein the electronic service manual display program includes the steps of

displaying an index page display area for displaying an index page on which a list of names for,
15 at the least, either the board or the circuit is published,

displaying a parts table page display area for displaying a parts table page on which a list of the parts is published,

20 displaying a drawing display area to display a drawing, at the least, either a board diagram for the board or a circuit diagram for the circuit,

displaying the index page in the index page display area,

25 displaying the parts table page in the parts

table page display area,

establishing in advance, for each of the names
published on the index page, index page information,
which is drawing identification information for the

5 drawing corresponding to the names, and when one of the
names displayed in the index page display area is
selected, obtaining from the index page information the
drawing identification information that is designated
for the selected name,

10 when the thus obtained drawing identification
information is information for a designation of the
board diagram or the circuit diagram, searching for and
displaying, in the drawing display area, the board
diagram or the circuit diagram that corresponds to the
15 drawing identification information,

when the drawing identification information
thus obtained is information for a designation of both
the board diagram and the circuit diagram, dividing the
drawing display area into first and second display areas
20 and searching for and displaying, in the first and
second display areas, the board diagram and the circuit
diagram that correspond to the drawing identification
information,

establishing in advance, for each graphics
25 primitive that is a constituent of the drawing, graphics

primitive information, which is part identification
information corresponding to each of the parts, and when
one of the graphics primitives in the drawing displayed
in the drawing display area is selected, obtaining
5 drawing identification information designated for the
drawing in which the graphics primitive is selected,
obtaining from the graphics primitive information the
part identification information designated for the
selected graphics primitive, and enhancing and
10 displaying the graphics primitive that is selected,
establishing in advance, for each of the parts
published on the parts table page, parts table page
information that includes part identification
information corresponding to the part and drawing
15 identification information corresponding to the drawing
that shows the part as a graphics primitive, searching
for the parts table page information that includes the
same part identification information as designated for
the graphics primitive selected in the drawing,
20 obtaining the drawing identification information from
the parts table page information that has been found,
and enhancing and displaying, in the parts table page
display area, a part corresponding to the graphics
primitive that is selected, and
25 when the drawing identification information

obtained from the parts table page information is information for a designation of both the board diagram and the circuit diagram, and when drawings are shown in the first and the second display areas, obtaining
5 drawing identification information for a drawing displayed in one display area that is not a location whereat a drawing that includes the selected graphics primitive is shown, and when the drawing identification information for the drawing in the display area is
10 included in the drawing identification information obtained from the parts table page information, enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that has been selected, or when the drawing
15 identification information for the drawing in the display area is not included in the drawing identification information obtained from the parts table page information, obtaining drawing information identification, from the drawing identification
20 information acquired from the parts table page information, that differs from the drawing identification information provided for the drawing shown in the remaining display area, reading and displaying, in the display area, the drawing that
25 corresponds to the drawing identification information,

and enhancing and displaying a graphics primitive in the display area that corresponds to the graphics primitive that is selected.

5 BRIEF DESCRIPTION OF THE DRAWINGS

[0033]

[Fig. 1] A hardware configuration diagram used for one embodiment of the present invention.

[Fig. 2] A flowchart showing an overview of a
10 service manual display operation according to the embodiment of the present invention.

[Fig. 3] A flowchart showing an overview of the display processing performed in a drawing display mode according to the embodiment of the present invention.

15 [Fig. 4] A flowchart showing an overview of the display processing performed when, in the drawing display mode according to the embodiment of the present invention, a user selects a drawing category on an index page.

20 [Fig. 5] A flowchart showing the processing performed when a graphics primitive is selected in a drawing displayed in a frame A under the display conditions for a double-screen mode according to the embodiment of the present invention.

25 [Fig. 6] A first page for a flowchart showing the

processing performed when a graphics primitive is selected in a drawing displayed in a frame C or a frame D under the display conditions for a triple-screen mode according to the embodiment of the present invention.

5 [Fig. 7] A second page for the flowchart showing the processing performed when a graphics primitive is selected in a drawing displayed in the frame C or the frame D under the display conditions for the triple-screen mode according to the embodiment of the present
10 invention.

 [Fig. 8] A first page of a flowchart showing an overview of the display processing performed, according to the embodiment of the present invention, when a user selects a part on a parts table page in the drawing
15 display mode.

 [Fig. 9] A second page of the flowchart showing the overview of the display processing performed, according to the embodiment of the present invention, when the user selects a part on the parts table page in the
20 drawing display mode.

 [Fig. 10] A diagram showing example index XML data and an example index page generated based on the index XML data according to the embodiment of the present invention.

25 [Fig. 11] A diagram showing example parts table XML

data and an example index page generated based on the parts table XML data according to the embodiment of the present invention.

[Fig. 12] A diagram showing an example SVG data structure according to the embodiment of the present invention.

[Fig. 13] An example circuit diagram to be displayed by processing SVG data using an SVG viewer according to the embodiment of the present invention.

[Fig. 14] An example board diagram to be displayed by processing SVG data using the SVG viewer according to the embodiment of the present invention.

[Fig. 15] A diagram showing an example layout (example double-screen mode) for the frame A and a frame B in a browser according to the embodiment of the present invention.

[Fig. 16] A diagram showing an example layout (example triple-screen mode) for the frame B, the frame C and the frame D in the browser according to the embodiment of the present invention.

[Fig. 17] A diagram showing an index page in the left frame of the browser, a circuit diagram in the frame A and a parts table in the frame B in the double-screen mode according to the embodiment of the present invention.

[Fig. 18] A diagram showing an index page in the left frame of the browser, a circuit diagram in the frame C, a board diagram in the frame D and a parts table in the frame B in the triple-screen mode according to the embodiment of the present invention.

[Fig. 19] A diagram showing the configuration of a terminal that can transmit and receive an electronic service manual display program for the embodiment of the present invention, and other, additional data.

[Fig. 20] A flowchart employed for the transfer (transmission) of the electronic service manual display program for the embodiment of the present invention, and other, additional data.

[Fig. 21] A flowchart employed for the reception of the electronic service manual display program for the embodiment of the present invention, and other, additional data.

[Fig. 22] An explanatory diagram for the formation of data packets performed by a data converter shown in Fig. 19.

[Fig. 23] An explanatory diagram for the recovery of data from the packets performed by the data converter shown in Fig. 19.

[Fig. 24] A configuration diagram showing a communication network, extended between a transmission

side and a reception side, for the electronic service manual display program for the embodiment of the present invention, and other, additional data.

5 BEST MODE FOR CARRYING OUT THE INVENTION

 [0034]

 One embodiment of the present invention will now be described while referring to the drawings. Fig. 1 is a diagram showing a hardware configuration used for the
10 embodiment of the present invention. Interconnected by a bus 8, in the state shown in Fig. 1, are a CPU (Central Processing Unit) 1, for performing a computation process and a control process; a memory 2, for temporarily storing data; a display device 3, such as a CRT (Cathode
15 Ray Tube) display device or a liquid crystal display device for visually presenting information; operation input means 4, such as a keyboard or a mouse for entering an operation or information; a hard disk 5, for storing various digital data; a CD-ROM drive 6, for
20 reading data recorded on a CD-ROM (Compact Disk Read Only Memory) 61; and a network card drive 7, for communicating through a network 71 with a server 72 or another communication device connected to the network.

 [0035]

25 Stored on the hard disk 5 are an OS (Operating

System) 51, which is the basic software for managing software and hardware and for enabling their use by an application; an XML parser 52, for analyzing text written in the XML (eXtensible Markup Language) data; a
5 browser 53, for analyzing and displaying XML data, analyzed by the XML parser 52, or HTML (Hyper Text Markup Language) data; and an SVG viewer 54, for displaying vector graphics data such as SVG (Scalable Vector Graphics) data or SVGZ (compressed SVG) data. It
10 should be noted that the SVG viewer 54 has a function for enabling the enlarged display and the reduced display of SVG data and the shifting and the display of SVG data in a drawing.

[0036]

15 These applications are executed by the CPU 1. Further, in the state specifically shown in Fig. 1, the SVG viewer 54 is plugged into the browser 53, and the XML parser 52 is provided independently of the browser 53. However, an environment wherein, for example, the
20 XML parser 52 is incorporated in the browser 53 may be employed. That is, in this case, any environment is available so long as XML data or SVG data can be appropriately displayed by the browser 53.

[0037]

25 On the CD-ROM 61 are stored a control program 62,

which includes script languages such as XSL (eXtensible
Stylesheet Language) data used for determining the
display style of the XML data, HTML data or JavaScript
(trademark) data, and contents data 63, which include
5 raster image data, such as XML data or PNG (Potable
Network Graphics) data, and vector graphics data, such
as SVG data or SVGZ data. When these data stored on the
CD-ROM 61 are read by using the CD-ROM drive 6, and are
processed and displayed by a script engine mounted in
10 the XML parser 52 or the browser 53, contents having a
desired form can be displayed on the browser 53. It
should be noted that the SVG data are vector graphics
data, the file size of which is smaller than that of PDF
data, and is written on the XML base.

15 [0038]

Further, in addition to the CD-ROM drive 6 and the
CD-ROM 61, a set consisting of a DVD (Digital Versatile
Disk) reading drive and a DVD, or various other
recording medium readers and recording media can be
20 employed. Further, by using the network card drive 7, a
control program 62 and contents data 63 stored in a
predetermined communication device (e.g., the server 72)
connected to the network 71 can be obtained, and a
desired display can be presented on the browser 53. Also,
25 a required control program 62 and required contents data

63 can be stored in advance on the hard disk 5.

[0039]

The configuration wherein the CPU 1, the memory 2, the display device 3, the operation input means 4, the hard disk 5, the CD-ROM drive 6 and the network card drive 7 are interconnected by the bus 8 can also be provided, for example, by a common PC. In the following explanation, an example is employed wherein a common PC is employed to perform the processing related to a service manual and to provide a display for the service manual.

[0040]

An explanation will now be given for the processing performed to display contents data 63 on the display device 3. For this, a service manual related to one specific product will be described. Basically, contents data 63 are prepared for each product, so that for one product one service manual is available. That is, for example, a service manual is individually prepared for each model of a DVD audio player. To present this service manual, XML data, included with the contents data 63, are employed as a database.

[0041]

To display the contents of XML data on the display device 3, first, the XML parser 52 analyzes the

hierarchical structure of and the format used for the XML data stored on the CD-ROM 61, or in the server 72 or another data storage means. The XML data analyzed by the XML parser 52 are then transmitted to the browser 53 or the SVG viewer 54, where they are processed by referring to predetermined XSL data. The resultant XML data are then displayed.

[0042]

A specific explanation will now be given for an index page, a circuit diagram page, a board diagram page and a parts table page that are generated, based on the XML data included in the contents data 63, and displayed on the display device 3. The index page and the parts table page are set up so that they are displayed by the browser 53, as desired, in accordance with a data set consisting of XML data for each corresponding page and predesignated XSL data. The circuit diagram page and the board diagram page are set so that they can be displayed by the browser 53, as desired, in accordance with SVG data or SVGZ data for each corresponding page.

[0043]

For example, in Fig. 10 are shown example XML data (index XML data) for a corresponding index page and the state wherein the index XML data are processed and displayed by the browser 53. The index XML data

represent a correlation of all the circuits mounted in the pertinent model, the browsing modes (which will be described later) for displaying SVG data related to the individual circuits, the circuit diagram data names (first SVG data names) for displaying detailed circuit diagrams for these circuits, and the board diagram data names (second SVG data names) for displaying display board diagrams for the individual circuits that are mounted.

10 [0044]

 To display index XML data on the browser 53, XSL for an index page display is used to process the index XML data. For example, an index page for displaying the list of circuits is generated based on the index XML data. The categories (hereinafter also referred to as drawing categories) in the circuit list can be selected by using a mouse, for example, and as will be described later, by selecting a drawing category, a circuit diagram or a board diagram that corresponds to the selected drawing category (specifically, a circuit diagram (first SVG data name) or a board diagram (second SVG data name) correlated in the index XML data) is selectively displayed in a predetermined frame.

 [0045]

25 Shown in Fig. 11 are example XML data (parts table

XML data) corresponding to a parts table page and the state wherein the parts table XML data are processed and displayed on the browser 53. For the parts table XML data, a record is provided for each of the parts, such as an IC, a resistor and a diode, that constitute a circuit. This record includes not only various information such as a symbol number (identification number), a part number and a part name, but also the names of circuit diagram data and board diagram data where the pertinent part exists. A symbol number is provided for each part so as to correlate each part with a specific symbol number without overlapping, i.e., one record is correlated with one symbol number. Furthermore, the parts table XML data satisfactorily represents all the parts of all the circuits constituting the model.

[0046]

To enable the browser 53 to display the parts table XML data, XSL for a parts table page display is used to process the parts table XML data. For example, a parts table page for the display of the list of parts is generated based on the parts table XML data. The individual entries (hereinafter also referred to as part entries) in the parts table list can be selected by using a mouse, for example, and as will be described later, by selecting a part entry, a circuit diagram or a

board diagram corresponding to the selected part entry
(specifically, a circuit diagram (first SVG data name)
or a board diagram (second SVG data name) correlated in
the parts table XML data) is selectively displayed in a
5 predetermined frame.

[0047]

Shown in Fig. 12 are an example SVG data structure
for circuit diagram data or board diagram data, and the
state wherein the SVG data are processed and displayed
10 by the browser 53. Further, shown in Figs. 13 and 14 are
an example circuit diagram and an example board diagram
for which display by the SVG viewer is enabled by the
processing performed for the SVG data. The SVG data
structure includes [<script>: definition of a script
15 element], [<z:info>: SVG custom information such as a
SVG data name], [<rect>: designation of the range for
one set of graphics data] and [<g>: graphics root group
to which belong various graphics primitives constituting
one set of graphics data]. The graphics root group is
20 formed of a plurality of layers [<g>: layer group], each
composed of a plurality of graphics primitives [<g>:
graphics primitive group]. A layer also includes lines
[<path>: line drawing element] used to form the
individual graphics primitives, and various text
25 information [<text>: character element], such as the

symbol numbers of parts. It should be noted that the graphics primitives correspond to the parts, such as ICs, resistors and diodes, that constitute circuits.

[0048]

5 The SVG data names are written in the SVG custom information for the SVG data structure using the same forms as are used for SVG data names written in the index XML data and the parts table XML data, and the symbol numbers of parts are written in the character
10 elements of the SVG data structure using the same form as are used for symbol numbers written in the parts table XML data. That is, the index XML data, the parts table XML data and the SVG data structure are closely correlated by employing the SVG data names and the
15 symbol numbers for the parts.

[0049]

 In addition to the XML data, SVG data written in the XML data form also serve as a database written in the text form. Therefore, in accordance with a script
20 language such as JavaScript (trademark), a keyword search can be easily performed for both the XML data and the SVG data by using a drawing data name or a symbol number as a keyword. It is especially very useful to employ the above described script language to perform a
25 search of the SVG data for the graphics primitives,

which are drawing data. Since the coupling process program can be located outside the contents, electronic service manual producers do not need the operation for the embedding, for example, of hyperlinks during the production of electronic service manuals, so that both the labor expended and the time required for production can be considerably reduced.

[0050]

Next, an explanation will be given for the sequential processing performed to display a service manual for a specific model. Fig. 2 is a flowchart showing an overview of the service manual display processing performed according to the embodiment of the present invention. In the following explanation, an example is employed whereby the control program 62 and the contents data 63 required to display a service manual are all stored on and read from, as needed, the CD-ROM 61.

[0051]

First, while monitoring the display device 3, a user manipulates the operation input means 4, such as a mouse, to select a file corresponding to a desired service manual. For example, a file corresponding to a service manual for a DVD audio/video player, model number A1234, is selected by the operation input means 4,

such as a mouse.

[0052]

When the user selects the service manual, the PC performs a process for using the browser 53 to display the top page of that service manual on the display device 3 (step S101: Display service manual). At this time, as is shown in Fig. 15 (which will be described later), the area in the browser 53 is divided into two frames (a left frame and a right frame), for example, and the index page for the service manual is displayed in one of the frames (the left frame), while a text page in the service manual is displayed in the other frame (the right frame). It should be noted that as is shown in Fig. 10, the index page is composed of index XML data and predetermined XSL data. And the text page, as are all other pages, is composed of XML text data and predetermined XSL data, and no detailed explanation will be given for the text page.

[0053]

Further, as an example, buttons for selecting a mode, either a text display mode or a drawing display mode, are displayed on the tool bar of the browser 53. Through a mode selection procedure, for which the mode selection button is used, a user can select either the text display mode or the drawing display mode.

[0054]

When the drawing display mode is selected by a user ("YES" at step S103), upon the selection of a category on the index page in the left frame, a circuit diagram or a board diagram corresponding to the selected category and information concerning parts included in the circuit diagram, or the board diagram, are displayed in the right frame (step S105: Present display in drawing display mode).

10 [0055]

On the other hand, when the text display mode has been selected by a user ("NO" at step S103), upon the selection of a category on the index page in the left frame, text pages including various captions and drawings corresponding to the selected category are displayed in the right frame (step S107: Present display in text display mode). In this embodiment, since the display is presented in the text display mode at step S101, the text display mode is continued when mode selection is not performed.

20

[0056]

The drawing display mode will now be described while referring to the flowchart in Fig. 3. Fig. 3 is a flowchart showing an overview of the display processing performed in the drawing display mode according to the

25

embodiment of the present invention. In the drawing display mode, as is shown in Fig. 15, subdivision of the right frame is performed to obtain two frames (frames A and B) (step S201: Divide right frame in two). The frames A and B can be arbitrarily arranged. As an example, the right frame can be divided into an upper and a lower frame, as is shown in Fig. 15. Hereafter, the upper frame in the right frame is called frame A (drawing display area), and the lower frame is called frame B (parts table page display area). A predetermined top page in the drawing display mode is displayed in frame A (step S203: Display predetermined page in frame A), and a parts table page is displayed in frame B (step S205: Display parts table page in frame B). It should be noted that, as is shown in Fig. 11, the parts table page is generated based on parts table XML data and predetermined XSL data.

[0057]

While referring to the flowchart in Fig. 4, an explanation will now be given for an overview of the display processing performed when the process at step S205 has been completed and when a user selects a drawing category on the index page displayed in the drawing display mode. Fig. 4 is a flowchart showing an overview of the display processing performed, according

to the embodiment of the present invention, when a drawing category on the index page is selected in the drawing display mode.

[0058]

5 When the drawing category displayed on the index page is selected by the user, first, the PC examines index XML data and obtains an SVG data name related to the selected drawing category (step S301: Obtain SVG data name), and determines a browsing mode for the
10 selected drawing category (step S303: Determine browsing mode). Various methods are available for obtaining the SVG data name. As an example, the SVG data name can be easily obtained by acquiring the name of a currently displayed file.

15 [0059]

 The browsing mode designated for each drawing category on the index page is information indicating that the drawing category includes one or both of a circuit diagram and a board diagram, and whether
20 subdivision of the frame A should be performed to obtain two more frames (frames C and D) is determined in accordance with the browsing mode. For example, when the browsing mode is "1", as is shown in index XML data in Fig. 10, two sets of SVG data (first and second SVG
25 data) are present as associated drawings, and in order

for these two sets of SVG data to be displayed, subdivision of the frame A should be performed to obtain the two frames C and D in which to display these drawings.

5 [0060]

On the other hand, when the browsing mode is "0", only the first SVG data is present as an associated drawing, or when the browsing mode is "3", only the second SVG data is present as an associated drawing and frame subdivision is not required; either the first or the second SVG data need only be displayed in the current frame A. It may also be determined that subdivision of the frame A is not to occur when the number of associated SVG data sets is one, or that subdivision of the frame A is to be performed to obtain the two frames C and D when the number of associated SVG data sets is two, so that the decision at step S303 can be made without the browsing mode being used. In this embodiment, the frame A has been subdivided to obtain the two frames C and D. However, the frame A may, for example, be subdivided in advance to obtain the two frames C and D, so that when the number of associated SVG data sets is one, either frame C or D is not displayed, or when the number of associated SVG data sets is two, both frames C and D are displayed. That is,

10
15
20
25

in accordance with the decision at step S303, whether to display one drawing in frame A or to independently display two drawings is determined.

[0061]

5 When frame A is subdivided as shown in Fig. 16, three frames, B, C and D, are obtained by dividing the right frame, and hereinafter, the state wherein the three frames B, C and D are obtained is called a triple-screen mode. Further, in comparison with the triple-
10 screen mode, the state wherein frames A and B are obtained by dividing the right frame, but wherein frame A is not subdivided is called a double-screen mode.

[0062]

As is described above, in accordance with the
15 browsing mode decision at step S303, either the double-screen or the triple-screen mode is determined for the right frame. In the double-screen mode, the first or the second SVG data is displayed in the frame A (step S305: Display first or second SVG data in frame A). In the
20 triple-screen mode, however, frame A is subdivided to obtain two frames (frames C and D) (step S307: Divide frame A in two). The layout of the frames C and D is arbitrary, and in this embodiment, as an example, frame A is divided into left and right frames, as is shown in
25 Fig. 16, and the first SVG data are displayed in the

left frame C (step S309: Display first SVG data in frame C), while the second SVG data are displayed in the right frame D (step S311: Display second SVG data in frame D).

[0063]

5 When a drawing category is selected on the index page in this manner, the browsing mode for the drawing category is identified. And when the browsing mode is the double-screen mode, as is shown in Fig. 17, the first or the second SVG data (a board diagram or a
10 circuit diagram) and the parts table page for the selected drawing category can be displayed in the right frame. On the other hand, when the browsing mode is the triple-screen mode, as is shown in Fig. 18, the first
15 SVG data (circuit diagram), the second SVG data (board diagram) for the selected drawing category and the parts table page can be displayed in the right frame.

[0064]

 Sequentially, an explanation will be given for the processing performed when a graphics primitive is
20 selected in a drawing displayed in the right frame in either the double-screen mode or the triple-screen mode.

 First, the processing performed when a graphics primitive is selected in the double-screen mode will be explained. Fig. 5 is a flowchart showing the processing
25 performed, according to the embodiment of the present

invention, when a graphics primitive is selected in a drawing displayed in frame A in the double-screen mode.

[0065]

When a user selects a graphics primitive from SVG data (a circuit diagram or a board diagram) displayed in the frame A in the double-screen mode, first, the PC identifies the frame wherein the graphics primitive was selected (step S401: Identify selection frame). Since in the double-screen mode SVG data is displayed only in frame A, the selection frame is identified as frame A. Then, the name of the SVG data that include the selected graphics primitive (step S403: Obtain SVG data name) and the symbol number of the selected graphics primitive are obtained (step S405: Obtain symbol number of selected graphics primitive).

[0066]

Thereinafter, in the double-screen mode, a graphics primitive that is displayed in the frame A and has the same symbol number as the selected graphics primitive is highlighted (step S407: Highlight selected graphics primitive). That is, through this processing, the graphics primitive selected by the user is highlighted on display. It should be noted that highlighting enables a user to easily identify a selected graphics primitive, by, for example, changing the color of the selected

graphics primitive, or by causing the selected graphics primitive to blink.

[0067]

Following this, parts table XML data are examined
5 based on the SVG data name, which includes the selected graphics primitive and its symbol number, so as to search for a record that has both the symbol number and the SVG data (step S409: Search for record in parts table XML data).

10 [0068]

When, as the result of the search at step S409, a pertinent record is found to be present in the parts table XML data ("YES" at step S411), the entry on the parts table page for the pertinent part is moved to a
15 layout position where it can be easily read by the user (for example, the topmost portion of the frame B), and is displayed using highlighting (step S413: Highlight pertinent part on parts table page). It should be noted, that as well as the highlighting of a graphics primitive,
20 the highlighting, on the parts table page, of the entry for the pertinent part enables the user to easily identify it, and that either the color of the entry for the pertinent part is changed, or the entry for the pertinent part blinks.

25 [0069]

Although the parts table XML data should include records for all the parts included in the circuit and board diagrams, the possibility exists that the pertinent record may not be present in the parts table data, e.g., wherein a component other than a part is selected as a graphics primitive (e.g., wherein a signal line that connects parts is selected). When the pertinent part is not present in the parts table XML data, as in the above case ("NO" at step S411), highlighting of an item on the parts table page is not performed and the processing is thereafter terminated.

[0070]

In this manner, a selected graphics primitive in a board or a circuit diagram can be highlighted in the frame A displayed in the double-screen mode, and the entry, on the parts table page, of a part corresponding to the selected graphics primitive can be highlighted in frame B.

[0071]

An explanation will now be given for the processing performed when a graphics primitive is selected in the triple-screen mode. Figs. 6 and 7 are the first and second pages of a flowchart showing the processing performed when a graphics primitive is selected in a drawing displayed in one of the frames C and D.

[0072]

When in the triple-screen mode a user uses, for example, a mouse and selects a graphics primitive in the first SVG data (circuit diagram) displayed in the frame C or a graphics primitive in the second SVG data (board diagram) displayed in the frame D, first, the PC identifies the frame wherein the graphics primitive is selected (step S501: Identify selected frame). Since SVG data are displayed both in the frames C and D in the triple-screen mode, it is readily apparent that the selected frame is either the frame C or D.

[0073]

Then, an SVG data name including the selected graphics primitive is obtained (step S503: Obtain SVG data name), as is the symbol number of the selected graphics primitive (step S505: Obtain symbol number of selected graphics primitive). In the triple-screen mode, graphics primitives are displayed in the selected frame, and a graphics primitive having the same symbol as the selected graphics primitive is displayed using highlighting (at step S507: Highlight selected graphics primitive). That is, through this process, the selected graphics primitive displayed in the frame (either the frame C or D) that includes the selected graphics primitive is highlighted.

[0074]

Following this, parts table XML data are examined based on the SVG data name, which includes the selected graphics primitive, and the symbol number of the selected graphics primitive, so as to search for a record that includes both the symbol number and the SVG data name (step S509: Search for record in parts table XML data).

[0075]

When, as a result of the search at step S509, the pertinent record is found to be present in the parts table XML data ("YES" at step S511), the entry for the pertinent part in the parts table page is moved to a layout position where it can be easily read by the user (e.g., the topmost in the frame B), and where it is displayed and highlighted (step S513: Highlight pertinent part on part table page). On the other hand, when the pertinent record is not present in the parts table XML data ("NO" at step S511), a presentation that includes highlighting is not provided for the parts table page, and the processing is thereafter terminated.

[0076]

In this embodiment, the same processing as in the double-screen mode has been performed, and in the triple-screen mode, a graphics primitive that is

displayed in a frame differing from the frame including the selected graphics primitive must be highlighted. However, there is a case wherein a graphics primitive selected in one frame is not included in a drawing displayed in the other frame. That is, graphics primitives included in drawings displayed in the two frames C and D do not always correspond to each other. For example, for a high-density PCB (Print Circuit Board), a plurality of circuits are mounted on a single board, and N circuit diagrams may correspond to one board diagram. Therefore, when a graphics primitive is selected in a board diagram, a check is performed to determine whether the selected graphics primitive is included in a currently displayed circuit diagram. When the selected graphics primitive is not included in a currently displayed circuit diagram, a circuit diagram that includes the selected graphics primitive must be searched for and displayed, and highlighting and centering must be employed to display a graphics primitive included in the circuit diagram. A centering display here means that the circuit diagram is displayed in the frame, so that the graphics primitive is presented near the center in the frame, which is a layout position that a user can easily see (hereinafter, the centering display is also employed with the meaning

that the drawing is so displayed that the graphics primitive is presented near the center of the frame).

[0077]

At step S513, highlighting is employed for the display of the pertinent part on the parts table page, and then an SVG data name differing from the SVG data name obtained at step S503 is designated (at step S515: Designate SVG data name to be displayed in other frame).

That is, at step S515, it is designated that SVG data be displayed in a frame different from the frame wherein the graphics primitive was selected.

[0078]

Thereafter, a check is performed to determine whether the SVG data that is currently displayed in the other frame (the frame D when a graphics primitive is selected from a drawing displayed in the frame C, or the frame C when a graphics primitive is selected from a drawing displayed in the frame D), which is a different frame from the one wherein the graphics primitive was selected, is the same as the SVG data designated at step S515 (step S517: SVG data to be displayed currently being displayed in other frame?). When the currently displayed SVG data is not the same as the SVG data to be displayed, the SVG data designated at step S515 is displayed in the different frame from the one wherein

the graphics primitive was selected (step S519: Display appropriate SVG data in other frame). Then, for the SVG data displayed at step S519, a graphics primitive having the same symbol number as the selected graphics

5 primitive is displayed, highlighted, and is also displayed, centered, in the different frame (other frame) from the one wherein the graphics primitive was selected (step S521: Display graphics primitive in other frame using highlighting and centering).

10 [0079]

In this manner, in the triple-screen mode, a graphics primitive, which has been selected in a board diagram or a circuit diagram displayed in either the frame C or D, is highlighted and displayed, and in the
15 other frame, the same graphics primitive as the selected graphics primitive is displayed using highlighting and centering. Further, the entry for a part that is shown on the parts table page display and that corresponds to the selected graphics primitive can be highlighted and
20 displayed in the frame B.

[0080]

An explanation will now be given for the processing performed when a specific part is selected on the parts table page shown in the frame B. Figs. 8 and 9 are the
25 first and second pages of a flowchart showing an

overview of the display processing performed, according to the embodiment of the present invention, when a user selects a part on the parts table page in the drawing display mode.

5 [0081]

When a user uses, for example, a mouse and selects a part on the parts table page displayed in the frame B, first, the PC examines parts table XML data and obtains the symbol number of the selected part and the SVG data name in the record for this part (step S601: Obtain symbol number of selected part and SVG data name including selected part). Further, the entry for the part selected on the parts table page is highlighted (step S603: Highlight selected part on parts table page).

15 [0082]

There are cases wherein only one set of SVG data is entered in the record for the selected part, and wherein two sets of SVG data are entered. When only one set of SVG data is entered, it is determined that the double-screen mode should be used to display a drawing that includes the part ("Double-screen mode" at step S605). When two sets of SVG data are entered, it is determined that the triple-screen mode should be used to display a drawing that includes the part ("Triple-screen mode" at step S605).

25

[0083]

When it is determined at step S605 that the double-screen mode should be used to display the drawing, a check is performed to determine whether the SVG data designated at step S601 is currently being displayed in the double-screen mode (step S607: SVG data to be displayed being currently displayed in double-screen mode?). When the SVG data designated at step S601 are currently being displayed in the double-screen mode ("YES" at step S607), highlighting and centering are used to display a graphics primitive having the symbol number of the selected part (step S609: Display pertinent graphics primitive by highlighting and centering). Whereas, when the SVG data designated at step S601 are not being displayed in the double-screen mode ("NO" at step S607), the double-screen mode is used to display the SVG data (step S611: Display, in double-screen mode, SVG data to be displayed), and highlighting and centering are used to display a graphics primitive having the symbol number of the selected part (step S613: Display pertinent graphics primitive by highlighting and centering).

[0084]

When it is determined at step S605 that the drawing should be displayed in the triple-screen mode, a check

is performed to determine whether two sets of SVG data designated at step S601 are currently being displayed in the triple-screen mode (step S615: SVG data to be displayed being currently displayed in triple-screen mode?). When the two sets of SVG data designated at step S601 are currently being displayed in the triple-screen mode ("YES" at step S615), highlighting and centering are used to display in the frames C and D a graphics primitive having the symbol number of the selected part (step S617: Display pertinent graphics primitive by highlighting and centering). Whereas, when the two sets of SVG data designated at step S601 are not currently being displayed in the triple-screen mode ("NO" at step S615), the triple-screen mode is used to display the two sets of SVG data (S619: Display, in triple-screen mode, SVG data to be displayed), and highlighting and centering are used to display in the frames C and D a graphics primitive having the symbol number of the selected part (step S621: Display pertinent graphics primitive by highlighting and centering).

[0085]

An explanation will now be given for a program transmission method and a program reception method that are employed when the electronic service manual display program for this invention is transmitted or received as

software via a communication line/a network. As is described above, in the configuration shown in Fig. 1, for example, an apparatus that employs an electronic service manual can obtain (download) from the server 72, through the network card drive 7 and the network 71, the control program 62 and the contents data 63 that are required to use the electronic service manual. The apparatus that employs the electronic service manual can also supply (upload) to the server 72, through the network card drive 7 and the network 71, the control program 62 and the contents data 63 that are required to use the electronic service manual.

[0086]

Fig. 19 is a diagram showing the configuration of a terminal that can transmit and receive the electronic service manual display program for the embodiment of the invention, and the other, additional data. The control program 62 and the contents data 63 are transmitted by a terminal T0 to a communication line (e.g., a CATV network) or a network (e.g., the Internet), and are transferred as packets to another host in accordance with a communication protocol. Further, for the reception of the control program 62 and the contents data 63 from another host, the control program 62 and the contents data 63 are received as packets, and are

stored, for example, in the RAM for the CPU 1 or the memory 2. It should be noted that the terminal T0 specifically represents a specific data transmission/reception function included in the apparatus that employs the electronic service manual and the server 72 shown in Fig. 1.

[0087]

The terminal T0 in Fig. 19 comprises: a reception buffer T1, a transmission buffer T2, a communication interface adaptor (Adaptor) T3, a data converter T4, a controller T5 and a communication terminal T6. The controller T5 controls the operations of the individual components of the terminal T0, and executes the transmission processing sequences in a flowchart in Fig. 20 and the reception processing sequences in a flowchart in Fig. 21.

[0088]

Fig. 20 is a flowchart for the transfer (transmission) of the electronic service manual display program for the embodiment of the present invention, and other, additional data. In the flowchart shown in Fig. 20 for the transfer (transmission), for example, as is shown in Fig. 22, the electronic service manual display program (program information) according to this invention is broken by the data converter T4, via the

transmission buffer T2, into blocks (called packets) P1, P2 and P3 of predetermined sizes (step S2001). Then, headers (addresses) are added, and the resultant packets are assembled or formatted into a digital signal

5 sequence (step S2002). The packets are then transmitted from the communication terminal T6 to a communication network NW (corresponding to the network 71 in Fig. 1) through the adaptor T3, which employs a communication protocol to connect with a partner station (step S2003).

10 The information carried by the packets shown in Fig. 22, which are routed across a communication network NW, is supplied in accordance with the communication protocol through a router R, which selects an optimal route, and a packet exchange Pn ($n = 1, 2, \dots, k$) to the
15 communication terminal T6 of the partner station in the communication network configuration shown in Fig. 24.

[0089]

Fig. 21 is a flowchart for the reception of the electronic service manual display program for the
20 embodiment of the present invention, and the other, additional data. The headers of the above described information received through the communication terminal T6 and the adaptor T3 are removed by the data converter T4, as is shown in Fig. 23 (step S3001). The resultant
25 information is arranged in the order P1, P2 and P3, and

the original data is recovered (step S3002). The thus
obtained data is supplied as a program, through the
reception buffer T1, to the internal memory (e.g., the
RAM of the CPU 1 shown in Fig. 1) (step S3003). In this
5 manner, the information is transmitted as packets to a
partner station (a plurality of stations is also
available), whereat the original information is
recovered. Through this processing, the control program
related to the electronic service manual, and the
10 contents data, are transferred (transmitted) to and used
by a partner.

[0090]

In this embodiment, it is assumed that a requesting
station (reception station) browses the Web page of a
15 data supplying station (a transmission station or a
server) and requests (accesses through the Internet),
from among items available on the Web page, a desired
control program and contents data, and that the
transmission station, upon receiving the request,
20 transmits the control program and the contents data to
the requesting station. For the Internet, the TCP/IP
protocol suite, for example, is generally employed as
the communication interface adaptor T3. Furthermore, the
present invention is not limited to the above described
25 data transmission/reception mode, and in addition to the

mode for transmitting data upon the reception of a request, unidirectional data transmission from the data supplying station to the other (reception station) is also enabled.

5 [0091]

 In this specification, an explanation has basically been given for the mode wherein the operation of this invention is performed when a CPU mounted in a computer, such as a PC, executes a predetermined program. In this case, as an example, the means for performing the steps in the individual flowcharts are provided by the CPU. However, when these means are constituted by hardware, a display control apparatus that provides the electronic service manual according to the invention, a transmission apparatus for transmitting a control program and contents data, and a reception apparatus for receiving a control program and contents data can also be obtained.

15 [0092]

20 The technical ideas, other than claims, that can be understood through the embodiment of the present invention will now be described.

 [0093]

 An electronic service manual display program, which permits a computer to provide a function for displaying,

25

on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

10 displaying an index page display area for displaying an index page on which a list of names for, at the least, either the board or the circuit is published;

15 displaying a parts table page display area for displaying a parts table page on which a list of the parts is published;

 displaying a drawing display area to display a drawing, at the least, either a board diagram for the board or a circuit diagram for the circuit;

20 displaying the index page in the index page display area;

 displaying the parts table page in the parts table page display area;

25 establishing in advance, for each of the names published on the index page, index page information,

which is drawing identification information for the drawing corresponding to the names, and when one of the names displayed in the index page display area is selected, obtaining from the index page information the drawing identification information that is designated
5 for the selected name;

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and
10 displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information;

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the
15 drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification
20 information;

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing
25 identification information, which is correlated with the

drawing, that shows the part as a graphics primitive,
and when one of the parts displayed in the parts table
page display area is selected, obtaining from the parts
table page information the part identification
5 information designated for the selected part and the
drawing identification information, then, reading a
drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area;
10 establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
information correlated with each of the parts, and based
on the part identification information included in the
15 graphics primitive information for the drawing that has
been read, searching for a graphics primitive for which
is designated the same part identification information
as the part identification information that has been
designated for the part selected on the parts table
20 page;
when the drawing that has been read is either the
board diagram or the circuit diagram, displaying the
board diagram or the circuit diagram in the drawing
display area, and employing the search results for the
25 graphics primitive to highlight and display the graphics

primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page; and

when the drawing that has been read includes both
5 the board diagram and the circuit diagram, displaying the board diagram and the circuit diagram in first and second display areas of the drawing display area, and employing the search results for the graphics primitive to highlight and display the graphics primitive that is
10 included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0094]

An electronic service manual display program, which permits a computer to perform a step of:

15 arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the index page display area, the parts table page display area and the drawing display area can all be browsed at
20 one time.

[0095]

A recording medium on which recorded is an electronic service manual display program, which permits a computer to provide a function for displaying, on a
25 display device, information that is related to parts and

that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the
5 predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, and which permits the computer to perform the steps of:

displaying an index page display area for
10 displaying an index page on which a list of names for, at the least, either the board or the circuit is published;

displaying a parts table page display area for
displaying a parts table page on which a list of the
15 parts is published;

displaying a drawing display area to display a drawing, at the least, either a board diagram for the board or a circuit diagram for the circuit;

displaying the index page in the index page display
20 area;

displaying the parts table page in the parts table page display area;

establishing in advance, for each of the names published on the index page, index page information,
25 which is drawing identification information for the

drawing corresponding to the names, and when one of the names displayed in the index page display area is selected, obtaining from the index page information the drawing identification information that is designated
5 for the selected name;

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and displaying, in the drawing display area, the board
10 diagram or the circuit diagram that corresponds to the drawing identification information;

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the
15 drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information;

20 establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the
25 drawing, that shows the part as a graphics primitive,

and when one of the parts displayed in the parts table
page display area is selected, obtaining from the parts
table page information the part identification
information designated for the selected part and the
5 drawing identification information, then, reading a
drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area;
establishing in advance, for each graphics
10 primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
information correlated with each of the parts, and based
on the part identification information included in the
graphics primitive information for the drawing that has
15 been read, searching for a graphics primitive for which
is designated the same part identification information
as the part identification information that has been
designated for the part selected on the parts table
page;
20 when the drawing that has been read is either the
board diagram or the circuit diagram, displaying the
board diagram or the circuit diagram in the drawing
display area, and employing the search results for the
graphics primitive to highlight and display the graphics
25 primitive that is included in the drawing that has been

read and that corresponds to the part selected on the parts table page; and

when the drawing that has been read includes both the board diagram and the circuit diagram, displaying
5 the board diagram and the circuit diagram in first and second display areas of the drawing display area, and employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that
10 corresponds to the part selected on the parts table page.

[0096]

A recording medium on which recorded is an electronic service manual display program that permits a computer to perform a step of:

15 arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the index page display area, the parts table page display area and the drawing display area can all be browsed at
20 one time.

[0097]

An electronic service manual display control method, for displaying, on a display device, information that is related to parts and that is used for a predetermined
25 product constituted by an electric circuit or an

electronic circuit employing the parts as components,
and at the least either a board diagram that represents
not only a board used for the predetermined product but
also the parts mounted on the board, or a circuit
5 diagram that represents a circuit provided on the board,
comprising the steps of:

displaying an index page display area for
displaying an index page on which a list of names for,
at the least, either the board or the circuit is
10 published;

displaying a parts table page display area for
displaying a parts table page on which a list of the
parts is published;

displaying a drawing display area to display a
15 drawing, at the least, either a board diagram for the
board or a circuit diagram for the circuit;

displaying the index page in the index page display
area;

displaying the parts table page in the parts table
20 page display area;

establishing in advance, for each of the names
published on the index page, index page information,
which is drawing identification information for the
drawing corresponding to the names, and when one of the
25 names displayed in the index page display area is

selected, obtaining from the index page information the drawing identification information that is designated for the selected name;

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information;

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information;

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the drawing, that shows the part as a graphics primitive, and when one of the parts displayed in the parts table page display area is selected, obtaining from the parts

table page information the part identification
information designated for the selected part and the
drawing identification information, then, reading a
drawing that corresponds to the drawing identification
5 information thus obtained, and enhancing the selected
part displayed in the parts table page display area;

establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
primitive information, which is part identification
10 information correlated with each of the parts, and based
on the part identification information included in the
graphics primitive information for the drawing that has
been read, searching for a graphics primitive for which
is designated the same part identification information
15 as the part identification information that has been
designated for the part selected on the parts table
page;

when the drawing that has been read is either the
board diagram or the circuit diagram, displaying the
20 board diagram or the circuit diagram in the drawing
display area, and employing the search results for the
graphics primitive to highlight and display the graphics
primitive that is included in the drawing that has been
read and that corresponds to the part selected on the
25 parts table page; and

when the drawing that has been read includes both the board diagram and the circuit diagram, displaying the board diagram and the circuit diagram in first and second display areas of the drawing display area, and
5 employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0098]

10 An electronic service manual display control method comprising a step of:

arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the
15 index page display area, the parts table page display area and the drawing display area can all be browsed at one time.

[0099]

An electronic service manual display control
20 apparatus, for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that
25 represents not only a board used for the predetermined

product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising:

means for displaying an index page display area for
5 displaying an index page on which a list of names for,
at the least, either the board or the circuit is
published;

means for displaying a parts table page display
area for displaying a parts table page on which a list
10 of the parts is published;

means for displaying a drawing display area to
display a drawing, at the least, either a board diagram
for the board or a circuit diagram for the circuit;

means for displaying the index page in the index
15 page display area;

means for displaying the parts table page in the
parts table page display area;

means for establishing in advance, for each of the
names published on the index page, index page
20 information, which is drawing identification information
for the drawing corresponding to the names, and for,
when one of the names displayed in the index page
display area is selected, obtaining from the index page
information the drawing identification information that
25 is designated for the selected name;

means for, when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information;

means for, when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information;

means for establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the drawing, that shows the part as a graphics primitive, and for, when one of the parts displayed in the parts table page display area is selected, obtaining from the parts table page information the part identification information designated for the selected part and the drawing identification information, then, reading a

drawing that corresponds to the drawing identification information thus obtained, and enhancing the selected part displayed in the parts table page display area;

means for establishing in advance, for each
5 graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information correlated with each of the parts, and for, based on the part identification information included in the graphics primitive
10 information for the drawing that has been read, searching for a graphics primitive for which is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table
15 page;

means for, when the drawing that has been read is either the board diagram or the circuit diagram, displaying the board diagram or the circuit diagram in the drawing display area, and for employing the search
20 results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page; and

means for, when the drawing that has been read
25 includes both the board diagram and the circuit diagram,

displaying the board diagram and the circuit diagram in first and second display areas of the drawing display area, and for employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0100]

An electronic service manual display control apparatus comprising:

means for arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the index page display area, the parts table page display area and the drawing display area can all be browsed at one time.

[0101]

A program transmission method, for transmitting an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the

predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising the steps of:

converting the electronic service manual display
5 program into a digital signal sequence, for a
communication line or a network, with an added header;
and

initiating employment of a communication protocol
with a partner station across the communication line or
10 the network and transmitting the digital signal sequence,

whereby the electronic service manual display
program includes the steps of

displaying an index page display area for
displaying an index page on which a list of names for,
15 at the least, either the board or the circuit is
published,

displaying a parts table page display area for
displaying a parts table page on which a list of the
parts is published,

20 displaying a drawing display area to display a
drawing, at the least, either a board diagram for the
board or a circuit diagram for the circuit,

displaying the index page in the index page
display area,

25 displaying the parts table page in the parts

table page display area,

establishing in advance, for each of the names published on the index page, index page information, which is drawing identification information for the drawing corresponding to the names, and when one of the names displayed in the index page display area is selected, obtaining from the index page information the drawing identification information that is designated for the selected name,

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information,

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information,

establishing in advance, for each of the parts published on the parts table page, parts table page

information that includes part identification
information correlated with the part and drawing
identification information, which is correlated with the
drawing, that shows the part as a graphics primitive,
5 and when one of the parts displayed in the parts table
page display area is selected, obtaining from the parts
table page information the part identification
information designated for the selected part and the
drawing identification information, then, reading a
10 drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area,
establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
15 primitive information, which is part identification
information correlated with each of the parts, and based
on the part identification information included in the
graphics primitive information for the drawing that has
been read, searching for a graphics primitive for which
20 is designated the same part identification information
as the part identification information that has been
designated for the part selected on the parts table page,
when the drawing that has been read is either
the board diagram or the circuit diagram, displaying the
25 board diagram or the circuit diagram in the drawing

display area, and employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page, and

when the drawing that has been read includes both the board diagram and the circuit diagram, displaying the board diagram and the circuit diagram in first and second display areas of the drawing display area, and employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0102]

A program transmission method whereby the electronic service manual display program comprises a step of:

arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the index page display area, the parts table page display area and the drawing display area can all be browsed at one time.

[0103]

A program transmission apparatus, for transmitting an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising:

means for converting the electronic service manual display program into a digital signal sequence, for a communication line or a network, with an added header; and

means for initiating employment of a communication protocol with a partner station across the communication line or the network and transmitting the digital signal sequence,

wherein the electronic service manual display program includes the steps of

displaying an index page display area for displaying an index page on which a list of names for, at the least, either the board or the circuit is published,

displaying a parts table page display area for
displaying a parts table page on which a list of the
parts is published,

displaying a drawing display area to display a
5 drawing, at the least, either a board diagram for the
board or a circuit diagram for the circuit,

displaying the index page in the index page
display area,

displaying the parts table page in the parts
10 table page display area,

establishing in advance, for each of the names
published on the index page, index page information,
which is drawing identification information for the
drawing corresponding to the names, and when one of the
15 names displayed in the index page display area is
selected, obtaining from the index page information the
drawing identification information that is designated
for the selected name,

when the thus obtained drawing identification
20 information is information for a designation of the
board diagram or the circuit diagram, searching for and
displaying, in the drawing display area, the board
diagram or the circuit diagram that corresponds to the
drawing identification information,

25 when the drawing identification information

thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and
5 second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information,

establishing in advance, for each of the parts published on the parts table page, parts table page
10 information that includes part identification information correlated with the part and drawing identification information, which is correlated with the drawing, that shows the part as a graphics primitive, and when one of the parts displayed in the parts table
15 page display area is selected, obtaining from the parts table page information the part identification information designated for the selected part and the drawing identification information, then, reading a drawing that corresponds to the drawing identification
20 information thus obtained, and enhancing the selected part displayed in the parts table page display area,

establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification
25 information correlated with each of the parts, and based

on the part identification information included in the
graphics primitive information for the drawing that has
been read, searching for a graphics primitive for which
is designated the same part identification information
5 as the part identification information that has been
designated for the part selected on the parts table page,

when the drawing that has been read is either
the board diagram or the circuit diagram, displaying the
board diagram or the circuit diagram in the drawing

10 display area, and employing the search results for the
graphics primitive to highlight and display the graphics
primitive that is included in the drawing that has been
read and that corresponds to the part selected on the
parts table page, and

15 when the drawing that has been read includes
both the board diagram and the circuit diagram,
displaying the board diagram and the circuit diagram in
first and second display areas of the drawing display
area, and employing the search results for the graphics
20 primitive to highlight and display the graphics
primitive that is included in the drawing that has been
read and that corresponds to the part selected on the
parts table page.

[0104]

25 A program transmission apparatus wherein the

electronic service manual display program comprises a step of:

arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the index page display area, the parts table page display area and the drawing display area can all be browsed at one time.

[0105]

A program reception method, for receiving an electronic service manual display program that permits a computer to provide a function for displaying, on a display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the predetermined product but also the parts mounted on the board, or a circuit diagram that represents a circuit provided on the board, comprising the steps of:

initiating employment of a communication protocol with a partner station across a communication line or a network and receiving a digital signal sequence; and

removing headers from the digital signal sequence and converting the digital signal sequence used for a

communication line or a network into the original
electronic service manual display program,

whereby the electronic service manual display
program includes the steps of

5 displaying an index page display area for
displaying an index page on which a list of names for,
at the least, either the board or the circuit is
published,

 displaying a parts table page display area for
10 displaying a parts table page on which a list of the
parts is published,

 displaying a drawing display area to display a
drawing, at the least, either a board diagram for the
board or a circuit diagram for the circuit,

15 displaying the index page in the index page
display area,

 displaying the parts table page in the parts
table page display area,

 establishing in advance, for each of the names
20 published on the index page, index page information,
which is drawing identification information for the
drawing corresponding to the names, and when one of the
names displayed in the index page display area is
selected, obtaining from the index page information the
25 drawing identification information that is designated

for the selected name,

when the thus obtained drawing identification information is information for a designation of the board diagram or the circuit diagram, searching for and displaying, in the drawing display area, the board diagram or the circuit diagram that corresponds to the drawing identification information,

when the drawing identification information thus obtained is information for a designation of both the board diagram and the circuit diagram, dividing the drawing display area into first and second display areas and searching for and displaying, in the first and second display areas, the board diagram and the circuit diagram that correspond to the drawing identification information,

establishing in advance, for each of the parts published on the parts table page, parts table page information that includes part identification information correlated with the part and drawing identification information, which is correlated with the drawing, that shows the part as a graphics primitive, and when one of the parts displayed in the parts table page display area is selected, obtaining from the parts table page information the part identification information designated for the selected part and the

drawing identification information, then, reading a drawing that corresponds to the drawing identification information thus obtained, and enhancing the selected part displayed in the parts table page display area,

5 establishing in advance, for each graphics primitive that is a constituent of the drawing, graphics primitive information, which is part identification information correlated with each of the parts, and based on the part identification information included in the graphics primitive information for the drawing that has
10 been read, searching for a graphics primitive for which is designated the same part identification information as the part identification information that has been designated for the part selected on the parts table page,

15 when the drawing that has been read is either the board diagram or the circuit diagram, displaying the board diagram or the circuit diagram in the drawing display area, and employing the search results for the graphics primitive to highlight and display the graphics
20 primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page, and

 when the drawing that has been read includes both the board diagram and the circuit diagram,
25 displaying the board diagram and the circuit diagram in

first and second display areas of the drawing display area, and employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been
5 read and that corresponds to the part selected on the parts table page.

[0106]

A program reception method whereby the electronic service manual display program comprises a step of:
10 arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the index page display area, the parts table page display area and the drawing display area can all be browsed at
15 one time.

[0107]

A program reception apparatus, for receiving an electronic service manual display program that permits a computer to provide a function for displaying, on a
20 display device, information that is related to parts and that is used for a predetermined product constituted by an electric circuit or an electronic circuit employing the parts as components, and at the least either a board diagram that represents not only a board used for the
25 predetermined product but also the parts mounted on the

board, or a circuit diagram that represents a circuit provided on the board, comprising:

means for initiating employment of a communication protocol with a partner station across a communication
5 line or a network and receiving a digital signal sequence; and

means for removing headers from the digital signal sequence and converting the digital signal sequence used for a communication line or a network into the original
10 electronic service manual display program,

wherein the electronic service manual display program includes the steps of

displaying an index page display area for displaying an index page on which a list of names for,
15 at the least, either the board or the circuit is published,

displaying a parts table page display area for displaying a parts table page on which a list of the parts is published,

20 displaying a drawing display area to display a drawing, at the least, either a board diagram for the board or a circuit diagram for the circuit,

displaying the index page in the index page display area,

25 displaying the parts table page in the parts

table page display area,

establishing in advance, for each of the names
published on the index page, index page information,
which is drawing identification information for the
5 drawing corresponding to the names, and when one of the
names displayed in the index page display area is
selected, obtaining from the index page information the
drawing identification information that is designated
for the selected name,

10 when the thus obtained drawing identification
information is information for a designation of the
board diagram or the circuit diagram, searching for and
displaying, in the drawing display area, the board
diagram or the circuit diagram that corresponds to the
15 drawing identification information,

when the drawing identification information
thus obtained is information for a designation of both
the board diagram and the circuit diagram, dividing the
drawing display area into first and second display areas
20 and searching for and displaying, in the first and
second display areas, the board diagram and the circuit
diagram that correspond to the drawing identification
information,

establishing in advance, for each of the parts
25 published on the parts table page, parts table page

information that includes part identification
information correlated with the part and drawing
identification information, which is correlated with the
drawing, that shows the part as a graphics primitive,
5 and when one of the parts displayed in the parts table
page display area is selected, obtaining from the parts
table page information the part identification
information designated for the selected part and the
drawing identification information, then, reading a
10 drawing that corresponds to the drawing identification
information thus obtained, and enhancing the selected
part displayed in the parts table page display area,
establishing in advance, for each graphics
primitive that is a constituent of the drawing, graphics
15 primitive information, which is part identification
information correlated with each of the parts, and based
on the part identification information included in the
graphics primitive information for the drawing that has
been read, searching for a graphics primitive for which
20 is designated the same part identification information
as the part identification information that has been
designated for the part selected on the parts table page,
when the drawing that has been read is either
the board diagram or the circuit diagram, displaying the
25 board diagram or the circuit diagram in the drawing

display area, and employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page, and

when the drawing that has been read includes both the board diagram and the circuit diagram, displaying the board diagram and the circuit diagram in first and second display areas of the drawing display area, and employing the search results for the graphics primitive to highlight and display the graphics primitive that is included in the drawing that has been read and that corresponds to the part selected on the parts table page.

[0108]

A program reception apparatus wherein the electronic service manual display program comprises a step of:

arranging, at fixed positions in a single display area, the index page display area, the parts table page display area and the drawing display area, so that the index page display area, the parts table page display area and the drawing display area can all be browsed at one time.

INDUSTRIAL APPLICABILITY

[0109]

As is described above, the present invention relates to the browsing of contents in an electronic service manual. The present invention is effective as:
5 an electronic service manual display program whereby, when an arbitrary element is selected in contents by a user, an element in other associated contents can be automatically selected, and a plurality of sets of
10 relevant information can be browsed and focused on at the same time, so as to acquire, for example, a superior information search function, and whereby a correlation between a drawing, such as a board diagram or a circuit diagram, and parts included in the drawing can be
15 accurately expressed, and the content production labor required of an electronic service manual producer can be reduced; a recording medium on which such a program is stored; an electronic service manual display control method and an electronic service manual display control
20 apparatus; a program transmission method and a program transmission apparatus; and a program reception method and a program reception apparatus.